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NOTE ON THE FRUIT OF ADANSONIA DIGITATA.

By F. L. Slocum.

Read at the Pharmaceutical Meeting February 17.

A short notice of the so-called "cream of tartar fruit" is contained in the "Amer. Jour. Pharm.," 1877, p. 254, and it is there stated to be probably distinct from the fruit of the *baobab*, Adansonia digitata. Opportunity was afforded by Prof. Maisch to examine some of the pulp covering the seeds of the latter. When examined under the microscope, the dry pulp is seen to be destitute of crystalline structure. It readily falls to a yellowish-white powder, and has a pleasant acidulous taste. The pulp of the cream of tartar fruit is of a darker color and more acid taste. The pulp is soluble in hot or cold water, and the solution has an acid reaction.

Examined for bases, potassium was found, and probably traces of calcium and phosphates, the two latter requiring confirmation, which, for want of time, had to be postponed for the present.

The examination for acids resulted in proving the presence of *malic acid* only, combined as an acid *malate of potassium*.

The aqueous solution, agitated with six volumes of strong alcohol, gives a copious precipitate of *pectin*, which forms the largest part of the pulp. The pectin, when dissolved in strong hot hydrochloric acid, yields a bright Magenta-colored solution.

Distilling the aqueous solution with water, ether and alcohol, gave no volatile compounds.

The concentrated aqueous solution left in the still had, in each case, a dark brown color, and deposited a white amorphous powder. On agitating this residue with ether, it was dissolved; on evaporation of the ether, it either separates as white, silky needles, or as a white amorphous mass.

After the removal of pectin and after the evaporation of the alcohol, the remaining solution yields, with alkaline solution of copper,

a very copious precipitate of cuprous oxide, showing a large percentage of *grape sugar*. No traces of *tartaric acid* were found.

Summing up the constituents, we have pectin, grape sugar, malic acid and potassium as acid potassium malate, a crystalline principle not further investigated, and probably traces of calcium and of phosphates.

EXTRACTUM GLYCYRRHIZÆ LIQUIDUM.

Editor of the American Journal of Pharmacy:

I take this opportunity to bring before you the following method of preparing the German succus liquiritiæ depuratus, often perscribed in this country. I call it *liquid* extract to distinguish it from the fluid extract of the root. The process is as follows:

Placing alternate layers of the commercial extract of licorice, in unbroken sticks, and clean straw into a sufficiently large percolator, I proceed to exhaust the licorice with water, to which a small quantity of ammonia water is added—about 4 ozs. to the gallon. You will at once see the object in using ammonia. It combines with the glycyrrhizin, which becomes freely soluble, and is therefore more readily exhausted from the extract; and as the percolate will have to be concentrated by evaporation, there will be no danger of having free ammonia in the product. I prepare it of such a strength that each pint represents 1 lb. of the solid extract.

Whenever the powdered extract is to be dispensed in solution I use this liquid extract, which imparts a much better appearance than the powder, and has just as much, if not more, of the sweet principle of licorice; at the same time, the preparation is free from the large amount of inert matter contained in the commercial extract of licorice.

I also obtained an excellent aromatic syrup of licorice from the formula published in the "Amer. Jour. Pharm.," 1877, page 578, by substituting this liquid extract for the powdered extract. I proceed exactly the same way as does the writer, only making this substitution. It is true that nearly all the aromatic properties of the drugs are lost by this process, but still enough are retained to give the syrup a very pleasant aroma. I have introduced this to physicians whenever I could, and always received their full approbation that it is a most excellent vehicle for quinia preparations. Yours, etc.,

WM. MITTELBACH.

St. Louis, Mo., January 30, 1880.

GLEANINGS FROM THE GERMAN JOURNALS.

By Louis von Cotzhausen, Ph.G.

The unpleasant and offensive Odor of Iodoform is easily overcome by E. Biermann by the addition of from 5 to 8 drops of volatile oil of fennel to 1 gram of iodoform. Its efficacy is really surprising, and far exceeds that of oil of peppermint (see "Amer. Jour. Pharm.," April, 1879, p. 190) and of balsam of Peru.—*Pharm. Ztg.*, Jan. 10, 1880, p. 16.

The Odor of Musk is rendered less penetrating, according to E. Biermann, by the addition of powdered fennel-seed (for other methods see "Amer. Jour. Pharm.," 1879, p. 25 and 487).—*Ibid.*

Salicylic Acid Tampons.—As employed in the German army, they consist of pieces of soft gauze of about 13 or 16 square centimeters, which are loosely tied around 1 or 2 grams of cotton, so as to be readily formed into any desired shape by pressure. One kilo of these tampons is impregnated with a solution of 110 grams of salicylic acid and 40 grams of castor oil in $3\frac{1}{2}$ or 4 liters of 95 per cent. alcohol. They are afterwards dried in a well-ventilated room, and are intended to be used in applying a temporary bandage until the services of a surgeon may be procured. Bernbeck suggests the use of glycerin in place of the castor oil, considering it far preferable.—*Ibid.*, 1879, p. 704.

Compound Solution of Carbolic Acid.—Hager recommends the following:

Take of	Sumatra benzoin (2d quality),	100·0
	Aloes,	50·0
	Crude salicylic acid,	25·0
Reduce to powder, and add		
	Oil of spike,	50·0
	Oil of star anise,	10·0
	Alcohol,	1000·0
Macerate for 1 day, shaking occasionally, then add:		
	Oleic acid,	100·0
And a previously prepared solution of		
	Crude caustic soda,	60·0
	Borax,	25·0
	Water,	500·0

Digest, shaking occasionally, for 1 day, and add to the warm mixture

	Crude carbolic acid (containing 90 to 95 per cent. phenol),	3000·0

Shake for half hour, then set aside in a cold place for a week, and decant the liquid.

The solution must be used cautiously, so as not to come into contact with the eyes, lips and other tender portions of the body. For killing vermin on animals it is applied with a brush, previously diluted with 100 or 120 parts of water, and with linen or cotton, also for disinfecting offensive sores. When used for protecting horses, etc., against flies and other insects, very little of the composition is applied with a brush once or twice a day.—*Phar. Centralh.*, Jan. 15, 1880, p. 27.

Fennel-honey consists of purified honey, 500 grams; malt-sugar, 1,000 grams; fennel oil, 5 drops, and a little glycerin.—*Pharm. Ztg.*, 1879, p. 719.

Clarified Honey.—Frank Juehling objects to the use of tannin, because honey thus purified always contains traces of tannic acid, which will react with iron, quinia and other salts. He prefers the following method: Six kilograms of honey are dissolved in 3 kilograms of water on a water-bath. About one sheet of filtering-paper, previously triturated into a pulp with water, and freshly-precipitated and washed aluminium hydrate are added, until a filtered sample, transferred to a test tube, appears perfectly bright. After cooling, the liquid is passed through a linen or cotton strainer and evaporated to the weight of 6 kilograms. The quantity of aluminium hydrate precipitated from 500 grams of alum and 600 grams of soda is more than sufficient.—*Ibid.*, 1879, p. 704.

Extemporaneous Preparation of Syrup of Licorice.—Juehling prepares a syrup, equal in strength to that of the German Pharmacopœia, by mixing:

℞	Essentiæ liquiritiæ,	10·0	
	Syrupi simplicis,	180·0	
	Mellis depurati,	120·0	M.

Essentia liquiritiæ is made by extracting twice 1,000 grams of licorice root with 3,000 grams of water, evaporatiog the infusion to 500 grams, adding 500 grams of alcohol, filtering and evaporating to 333 grams (consistence of honey).—*Ibid.*

The solubility of Ozone in water has hitherto been a disputed question. A. R. Leeds conducted ozone into two bell-glasses containing water, which covered lead sulphide in one and silver in the other glass. Sufficient ozone was absorbed by the water to cause oxidation of the silver and of the lead sulphide, in the latter case apparently with the production of brown anhydrous lead peroxide and of free sulphuric acid.—*Ber. d. Deutsch. Chem. Ges.*, 1879, p. 1831.

Karlsbad-Sprudel Salt (see also "Amer. Jour. Phar.," 1878, p. 474, and 1879, p. 454). Dr. Harnack states that

The genuine anhydrous salt contains sodium sulphate, 99·33 per cent; sodium carbonate, 0·45 per cent., and sodium chloride, 0·076 per cent., and, therefore, is nearly pure Glauber's salt, from which it differs chiefly in being 30 times more expensive.

The artificial salt contains much more soda, is made usually by allowing a solution of 200 parts of crystallized sodium sulphate, 30 parts of crystallized sodium carbonate and 5 parts of sodium chloride to crystallize, is not uniform, and, therefore, objectionable, for which reason the author suggests the adoption of an officinal formula directing a mixture of the powdered salts.—*Pharm. Ztg.*, Jan. 21, 1880, p. 38, from *Klin. Wochenschr.*

Ferric Hydrates.—The trihydrate, $Fe_2(OH)_6$, has never been prepared thus far according to Tommasi, who mentions the existence of two isomeric, respectively red and yellow, monohydrates, $Fe_2O_2(OH)_2$, and bihydrates, $Fe_2O(OH)_4$, and publishes the following distinctions:

The red bihydrate remains unaltered up to 50°C. and the yellow to 105°C.; the red monohydrate to 92° and the yellow to 150°C. The red hydrates, when dehydrated, leave as a residue a brown oxide having the density 5·1, while the yellow hydrates leave a red or reddish-yellow oxide having the density 3·95. The red hydrates dissolve even in dilute acids, while the yellow are scarcely soluble in concentrated acids. The red hydrates are readily dissolved by ferric chloride solution, and this solution yields, on the addition of sodium sulphate or sulphuric acid, a precipitate of hydrated oxide; the yellow hydrates are insoluble in ferric chloride. The red hydrates are entirely dehydrated by boiling, while the yellow are only reduced to monohydrates. Tommasi considers the combinations of ferric hydrates with ferric salts mere mechanical mixtures and not chemical compounds.—*Ber. d. Deutsch. Chem. Ges.*, 1879, p. 1929.

Determination of Metallic Iron in Reduced Iron.—G. Vulpius proposes the following process: Digest 1 gram of the iron for one hour with a solution of 5 grams of pure copper sulphate in 25 grams of water, acidulated with 2 drops of dilute sulphuric acid, filter into a previously weighed flask, wash the filter with sufficient distilled water to obtain 50 grams of filtrate, add 1 gram of pure powdered iron (the percentage of carbon contained in it should be previously determined), digest until all the copper is precipitated in a metallic state, add 5 grams

of pure concentrated sulphuric acid and heat slowly to boiling, and until the iron is completely dissolved, when the precipitated copper will alone remain, contaminated with a little carbon. Wash it repeatedly by decantation with water, afterwards with alcohol, absolute alcohol and ether, dry the flask quickly by heat, weigh, and from the weight of the copper subtract the carbon of the powdered iron (about 0·01 gram). Since the difference between the weight of this precipitated copper and the total weight of the metallic copper (1·271 gram) contained in the 5 grams of crystallized sulphate equals the quantity of the copper, which was precipitated by the metallic iron contained in 1 gram of the reduced iron, the percentage of the unoxidized metal is readily determined from the ascertained weight, and the relation between the atomic weights of copper and iron. The number of centigrams of iron calculated from the copper which was precipitated in the first part of the process indicates directly the percentage of the metallic iron contained in the reduced iron.—*Archiv d. Pharm.*, Dec., 1879, p. 508.

Detection of Ammonia in Water.—Ammonia is usually present in water as carbonate, but frequently in such small quantities that it cannot be detected by the ordinary tests. In such cases Hager ascertains its presence by mixing 2 to 3 liters of the water with 20 drops hydrochloric acid, evaporating to dryness, dissolving the residue in 10 or 15 cc. distilled water, filtering, and applying Bohlig's test, which consists in adding, first, 5 drops of solution of corrosive sublimate (1 part in 30 parts of water), and then 5 drops of solution of potassium carbonate (1 part in 50 parts of water), when a cloudiness indicates the presence of ammonia.—*Pharm. Centralh.*, Dec. 25, 1879, p. 474.

An Acid and a Neutral Ammonium Valerianate are distinguished by Hager, who reports that the commercial ammonium valerianate is always the *acid salt*, which consists usually of handsome crystals, having an acid taste and reaction, and readily decomposed unless kept in tightly stoppered bottles. The decomposition is proved by its penetrating odor and the strongly rotating motion of the crystals when thrown on cold water; this rotation is an excellent test for identifying the salt.

Neutral Ammonium Valerianate is obtained with the greatest difficulty in prismatic crystals by the action of anhydrous ammonia on the monohydrated acid at a low temperature; the crystals of the neutral salt liquefy even at a moderate temperature, without, however, absorbing moisture. Hager thinks that physicians, when ordering ammonium valerianate in pills or in any other solid shape, want the acid valerian-

ate, and when ordering the salt in a mixture, invariably wish the neutral salt, which can be readily kept unaltered in solution for such purposes. Ammonium valerianate is considered an excellent stimulant and anti-neuralgic remedy, and is usually given in doses of 0·2 to 0·4 to 0·6 gram every two or three hours.—*Ibid.*, 1879, p. 465.

Pure Valerianic Acid.—The so-called monohydrate is now a commercial article, and in Hager's opinion should be made officinal, especially since the trishydrate of the market is rarely pure and contains more or less monohydrate. The pharmacopœia should require it to be tested for butyric acid and for amylic alcohol. For butyric acid the author uses copper acetate, and for testing for valeraldehyd he mixes 2 grams of the acid first with 3 grams of caustic ammonia, and then with about 150 grams of cold water. After agitating the mixture well it should remain either entirely clear, or possess merely a very slight opalescence.—*Ibid*, Jan. 8, 1880, p. 13.

Contamination of Benzoic Acid with Corrosive Sublimate.—Spoerl purchased benzoic acid from a well-known chemical laboratory, and found it to be contaminated with a not inconsiderable quantity of corrosive sublimate. From information received from the seller, it appears that the acid had been obtained from England. It is possible that this accidental contamination was caused by subliming the acid in an apparatus previously used for corrosive sublimate and not properly cleaned.—*Archiv d. Pharm.*, Dec., 1879, p. 517.

Benzoic Acid in the Berries of Vaccinium Vitis-idæa.—The cowberries resist fermentation and decomposition for a long time, on which account Naegeli supposed the presence of an antiferment. O. Lœw isolated from them benzoic acid by distilling the expressed juice repeatedly with water, neutralizing the slightly acid distillate with soda, concentrating considerably, and adding dilute sulphuric acid. Benzoic acid was precipitated as a crystalline magma, and the supernatant liquid contained a little formic acid.—*Ztschr. d. Oest. Apoth. Ver.*, Dec. 20, 1879, p. 543, from *Jour. f. Prakt. Chem.*

Teucrium fruticans, L., N. O. Labiatæ, indigenous to Southern Europe, called "Olivetto" by the Italian peasants on account of the resemblance of its leaves to olive leaves, was subjected to a chemical analysis by Oglialoro, who states that it contains no volatile oil, but teucrin, a substance containing no nitrogen, crystallizing in slender yellow prisms, scarcely soluble in the ordinary solvents except in glacial acetic acid, and transformed by dilute nitric acid into an acid

which is supposed to be hydroxytoluic acid. Dilute sulphuric acid also decomposes teucrin, when boiled with it, into an acid and glucose.—*Pharm. Ztg.*, Jan. 3, 1880, p. 3, from *Gazz. Chim. Ital.*

Heracleum giganteum hort., Pastinaca sativa, L. and Anthriscus cerefolinm, *Hoffm.*, were analyzed by Dr. Gutzeit, who found free ethylic and methylic alcohol in the distilled waters of the unripe fruits, and proved the existence of ethylbutyrate in those portions of heracleum oil having the lowest boiling point, and the certain existence of solid hydrocarbons, belonging to the parffins, and having the general formula C_nH2_n. The author isolated also a new crystalline substance "heraclin," $C_{32}H_{22}O_{10}$ from the unripe fruits of heracleum and pastinaca. This heraclin is an odorless and tasteless substance containing no nitrogen, melts at almost 185°C., and crystallizes from alcoholic solutions in white, brilliant, silky needles, grouped in the shape of stars, gradually turns yellow, does not react with litmus-paper, is insoluble in water, readily soluble in chloroform, difficultly soluble in ether, soluble in 1,200 parts of cold and in 400 parts of boiling carbon bisulphuret, in 700 parts of cold and in 60 parts of boiling absolute alcohol.—*Ibid.*, Nov. 12, 1879, p. 703, from *Sitzungsb. d. Jena Ges. f. M. u. Nat.*

Pilocarpina.—A. Poehl recommends its preparation by extracting jaborandi leaves with hot water acidulated with 1 per cent. of hydrochloric acid, precipitating by solution of lead subacetate, concentrating the filtrate, adding phospho-molybdic acid, washing the heavy flocculent precipitate with water acidulated with hydrochloric acid, drying with baryta water on a water-bath, and extracting the pure alkaloid from the residue by chloroform. Thus prepared, pilocarpina is a soft, tough, colorless mass, soluble in water, has the formula $C_{23}H_{34}N_4O_4$ (Kingzett), after being dried at 100°, is not volatile, and begins to be decomposed at 180°C. The leaves appear to contain only one alkaloid. In regard to the volatile oil of jaborandi, Poehl states that the properties of the hydrocarbon *pilocarpene*, $C_{10}H_{16}$, which distills over between 174° and 176° are so similar to those of *carvene* of oil of caraway that he considers them to be identical.—*Ibid.*, 1879, p. 718.

Duboisinic Acid and Piturina, from Pitury—the dried branches and leaves of Duboisia Hopwoodii. F. von Mueller and L. Rummel isolated duboisinic acid in colorless rhombic prisms and tabular crystals, having a slightly acid reaction and a slightly bitter taste, and being soluble in water and alcohol. They obtained also 1 per cent. of an alka-

loid as a thick, strongly alkaline, brown, oily liquid, heavier than water, combining readily with acids, and possessing a strong, burning taste, and an odor resembling tobacco. Even at ordinary temperatures it irritates the eyes, nose and throat, and in the presence of hydrochloric acid forms white clouds. It dissolves in every proportion in water, alcohol and ether, and greatly resembles nicotina. The authors at first supposed this alkaloid to be identical with the alkaloid isolated from Duboisia myoporoides, but were convinced by further investigations that the two alkaloids differ considerably, both in regard to their physiological action and also in chemical and physical respects, for which reason they suggest the adoption of the name Piturina for the alkaloid of Duboisia Hopwoodii, and favor the retention of the name Duboisina for the alkaloid of Duboisia myoporoides. The yield of the latter alkaloid, obtained by the authors from the fresh (cultivated) plant, amounted to 0·55 per cent.—*Ztschr. d. Allg. Oest. Ap. Ver.*, Jan. 10, 1880, p. 21.

Are Swedish Safety Matches Poisonous?— Hamberg found them to contain, besides amorphous phosphorus, which, when pure, is not poisonous, also antimony, arsenic, ordinary phosphorus and a large percentage of potassium bichromate, thus proving them to be very poisonous. The arsenic is attributed by Hamberg and Dr. S. Jolin to the impure amorphous phosphorus used in the preparation of the matches, and this was found to contain almost 2 per cent. of ordinary phosphorus and nearly 1 per cent. of arsenic.—*Archiv d. Pharm.*, Dec., 1879, p. 518.

Antidote for Carbolic Acid.— Husemann recommended several years ago saccharated lime (a solution of caustic lime in sugar-water) for neutralizing the poisonous effect of carbolic acid, while Sanftleben claims to have found an antidote in sulphuric acid, which, according to his statement, enters into a not poisonous combination with carbolic acid; he prescribes the following:

℞	Dilute sulphuric acid, ...	10 grams.
	Muc. of gum arabic, ...	200
	Simple syrup, ...	30

Mix, and give a tablespoonful every hour.

—*Ztschr. d. Allg. Oest. Apoth. Ver.*, Jan. 10, 1880, p. 10, from *Pharm. Ztschr. f. Russl.*

Chloral hydrate as an Antidote.—Th. Husemann states that

1. Chloralhydrate is an excellent antidote for strychnia and other poisonous vegetable alkaloids which cause convulsions. In order to

prove effective it must be given in sufficiently large doses, not less than two and not more than three grams to adults, and in case the convulsions reappear after the sleep produced by the chloral, one-half of the former dose is given.

Chloral hydrate ought to be given internally when possible, but may be injected into the rectum, or hypodermically if the patient cannot swallow it. It was found to prevent the death of rabbits poisoned with five times a fatal dose of strychnia.

2. As an antidote for ammonium salts, chloralhydrate is not only not efficacious, but even deleterious, since it was found to shorten the life of poisoned animals.

3. Chloral hydrate was found by Browne and Amagat to merely prolong the life of rabbits to about eight times the usual duration of a fatal intoxication by picrotoxin.

4. Chloral hydrate will not prevent death by overdoses of santonin or sodium santonate, according to Binz and Becker, although it was observed to prevent convulsions if previously administered.

5. Chloral hydrate was found by Husemann and Wehr to counteract almost twice the fatal dose of codeia, but no more. However, it greatly prolonged the life of animals poisoned with twice the fatal dose or larger doses. The authors consider it nevertheless far less reliable than the usual antidotes for codeia.

6. Chloral hydrate is no antidote for barium chloride, carbolic acid or calabarina.—*Archiv d. Pharm*, Dec., 1879, p. 481–508.

PREPARATION OF MERCURIAL OINTMENT.

By E. Dieterich.

Translated and abridged from "Pharm. Centralh.," Jan. 1st and 8th, 1880, by Louis von Cotzhausen, Ph.G.

Few preparations have ever been so much experimented with as mercurial ointment, and have busied the inventing brain of as many pharmacists, whose researches ultimately terminated in suggesting a formula of their own for preparing it. Having tested all those methods which did not seem too absurd, in order to be able to pass judgment on their respective merits, and to compare them with my own experience in its manufacture, I report in the following my observations with the different processes arranged in the chronological order of the latter:

1. Reinsch proposed 1 part of turpentine and a little alcohol to 18 parts of mercury. The turpentine is contrary to the directions of the German Pharmacopœia; his method of extinguishment yields satisfactory results, especially if absolute alcohol is used.

2. Heusler adds ether. Ether, petroleum naphtha, chloroform, etc., aid momentarily in dividing the mercury; as the evaporation continues, almost all the mercury separates again.

3. Reinige employs steam power, and adds sulphuretted oil of turpentine. I agree with him in using steam-power, but consider the addition unsuitable, and therefore did not test its efficacy.

4. Lœwel attaches a mixture of olive oil and mercury to the saw of a saw-mill, and extinguishes by shaking. This process is recommended by many, but seems unsuitable for making large quantities. I, like most others, had no facilities to test this method.

5. Luederson states that a darker colored ointment is abtained by long-continued trituration, caused, in his opinion, by the formation of black oxide. I consider this correct as far as the color is concerned, but do not believe in his explanation, since I always obtain the dark colored ointment by triturating with steam-power for 5 or 6 hours, in which short time a formation of black oxide seems impossible.

6. Guibourt mentions 1·715 as the specific gravity of an ointment made in the proportion of 1 to 2, while Buchner found it to be 1·330. Hager agrees with the latter, while I found it to be 1·32 to 1·34.

7. Heauly suggests in the place of the saltpetre, which was recommended by Polmonté, an addition of 6 parts of potassium sulphate to 500 parts of mercury. Both plans were not tried by me.

8. Mouchon adds one-fifth stearic acid, which I tried without success.

9. Snoep recommended boiling the fatty matter to be used for some time with water, then dehydrating it, and claims to have obtained usually favorable results. The process was not satisfactory in my hands.

10. Coldefier spreads 500 grams of lard under a bell-glass, in a thin layer, so as to increase its surface, and then suspends above t a piece of phosphorus for 15 days; the ozonized lard is then transferred to a wide-mouthed bottle, 250 grams of mercury are added, and heat is applied until the lard begins to flow, when the mixture is well shaken for some time, and the ointment is finished by quickly cooling with immersion in cold water. I made use of the first portion of this sug-

gestion, not believing in the second; *i. e.*, I used ozonized lard for triturating, but not for shaking with the mercury; the ointment was completed in a much shorter period than with pure lard, but a much longer time was required than with old ointment.

11. Overbeck thinks that old ointment contains mercury in combination, and thus explains the success with it in extinguishing. I shall prove that this is not the case.

12. Geissler recommends steam-power as it is used in England, the machine used consisting of a circular iron trough, constantly kept in a rocking motion, in which two iron balls take the place of the pestle. A porcelain apparatus, constructed on the same plan, is used for dissolving indigo in sulphuric acid. I believe that it is far superior to manual labor for preparing the ointment, although I do not see any extraordinary virtues in it.

13. Prof. Ludwig's plan was to precipitate the mercury in globules, invisible to the naked eye, from a solution of nitrate of mercury, by conducting sulphurous acid gas into it, and, after washing it, to mix it with the fatty matter. I did not try this method, but believe that it would be used more extensively if it yielded reliable results.

14. Magnus triturates with almond oil and Peruvian balsam. The oil was tried by me unsuccessfully, while the balsam seemed objectionable to me, for which reason I did not test its efficacy.

15. Another author suggests 2 parts of lard and 1 part of Japan wax, which mixture is less adapted for extinguishing the mercury than lard alone.

16. Adolph Brejcha uses glycerin ointment, with which I obtained very unfavorable results.

17. Wallet suggests adding the mercury in small quantities, gradually, to the fat, and extinguishing each portion entirely before adding another. This is a very sensible suggestion, and will always yield a good ointment in a comparatively short time.

18. Another author claimed, four or five years ago, that lard containing no water is equally well adapted as old ointment. I cannot corroborate this statement, but find that it does not extinguish the mercury any quicker than lard containing water, although I consider the former far preferable for preparing any ointment, since the absence of water is the best remedy for preventing rancidity.

19. Supposing that rancid fat extinguishes mercury more quickly than not rancid fat, and attributing this apparently greater affinity for

mercury to the presence of fatty acids, somebody suggested to add a few drops of olein to the fatty matter used for triturating. The mass turns foamy when triturated without mixing with the mercury.

20. Donovan thinks that the metal is first transformed into mercurous oxide before it dissolves in the fat; that it is only efficacious in solution, and that the balance of the metal is wasted and useless; in order to obtain an ointment containing no free metal, the oxide is to be digested with the fat for some time at 150 to 160°; the mixture is then cooled and triturated. I did not try this suggestion.

21. Godeffroy uses vaseline instead of the old ointment, and claims to obtain a perfect ointment in a shorter time. I tried the plan on a large scale, and obtained in two minutes a uniform grayish-white mixture, containing numerous metallic globules; the mercury was extinguished to an equal extent in two minutes as it was when triturated with old ointment for 10 to 15 minutes. I then supposed vaseline to be the best vehicle, but soon became aware of my mistake, since further trituration for eight days produced no noticeable change in the ointment, the mercury being apparently no more extinguished than it was at the end of the first two minutes. I therefore suppose that Godeffroy commenced the trituration with the pestle, and continued it with pen and ink.

22. Lautenschlaeger conducts ozone into melted lard, and extinguishes the mercury with the ozonized lard in a remarkably short time. I see no particular gain of time in this process, and prefer old ointment as a vehicle.

23. Kenzel made a celebrated blue ointment in the eighteenth century by adding 6 grains of sulphur to 2 ounces of the lard; thus a very efficacious ointment is obtained in a short time.

24. Hager suggests either old ointment or a mixture of 1 part of wax, 1 part of tallow, and 3 parts of olive oil. The latter mixture is far inferior to old ointment, and will only prove successful in connection with absolute alcohol.

Attempts to prepare an ointment with lard, to which an alcoholic or an aqueous potassa solution had been added, yielded unsatisfactory results.

In almost all these experiments I used steam-power, and feel fully convinced by the results that

1. The best vehicle for extinguishing the mercury is not "old ran-

cid ointment," but "ointment," either old or fresh. (I frequently use blue ointment made the day before.)

2. The mercury ought to be added gradually.

3. The specific gravity of the completed ointment ought to be between 1·32 and 1·34.

4. No rancid fats should be used in its preparation.

5. The excellent results obtained with old ointment as a vehicle are not due to the rancidity of the ointment, but the affinity for larger quantities of mercury depends greatly on the degree of uniform extinguishment of the mercury in the vehicle.

I determine the percentage of mercury in a commercial mercurial ointment by Hager's method, modifying the latter, however, by using ether instead of benzin for dissolving the ointment; the mercury soon settles, and after washing six or seven times in a narrow but tall cylindrical glass vessel, the last traces of ether may, by a moderate heat, be readily removed from the sediment, which is then weighed.

MANUFACTURE of OLIVE OIL in SOUTHERN FRANCE.

Translated from "Phar. Handelsbl.," Jan. 14, by LOUIS VON COTZHAUSEN, Ph.G.

In the establishment of E. Jourdan de Jauffret et Fils, at Salon in the Provence, the manufacture of olive oil necessarily always begins in the first half of November, because the olives become ripe in this season in the Provence, and, when begun, it must be continued night and day for three or four months, the length of the season, of course, depending on the duration of the harvest.

De Jauffret & Son employ eighteen laborers, who are divided into two divisions, working respectively during the day and during the night, and producing daily 1,200 kilograms of the best oil from 1,000 dekaliters of olives. The facilities of the establishment are such that the largest harvests of olives can be handled quickly, so as not to necessitate a prolonged storing of olives, which would cause them to ferment, when they yield an inferior oil.

Nevertheless, there are some manufacturers who believe in this fermentation, claiming that it increases the yield because it assists the separation of the oil from the cellular tissue of the olives. But experience has shown that this increase in yield can only be obtained at the expense of the quality of the oil, and that the larger yield never makes up for the inferiority of the oil.

In the establishment of Jourdan de Jauffret this is avoided. Nevertheless, their manner of preparing the oil is such that fully as much, if not more, is obtained by them as by those allowing the olives to ferment. Before the olives enter the mills they are carefully spread over the floor of the well-ventilated store-room, where they are allowed to remain for three days, if the wind is from the south, and four or five days if from the north. The first stage of the manufacture consists in grinding the olives between revolving granite stones; then the mass, enclosed in baskets, is exposed to a slight pressure in an iron press, and yields the so called virgin oil (huile vièrge), which has gained the good reputation for the oil of the Provence. The mass in the baskets is then exposed to a stronger pressure, and yields the well-known good oil usually found in commerce. After this second operation, the mass is taken from the basket-work, and is again placed into the mills, where it is thoroughly ground up, when it is again packed into baskets and is exposed to the pressure of hydraulic presses.

During this operation the effect of fermentation is made use of by treating the mass with boiling water, in order to facilitate the separation of the oil from the cells, which still retain it. Thus, a larger yield is obtained from the olives without interfering with the quality of the greater portion of the oil, since only the last yield is exposed to heat. This oil is always better than the oil obtained from fermented olives, because frequently a rotten odor is produced by fermentation, which is imparted even to the oil expressed first.

The oil expressed with the aid of hot water is known in commerce as fine table-oil. The greatest precautions must be used in the manufacture. Columelle even forbids the kindling of fires in the mills during the manufacture, claiming that the smoke of a single lamp may prove injurious to the quality of the oil. This caution is necessary in the older mills. Even at the present time, most mills are under ground, and of such a construction that air and light can scarcely penetrate into them, and that foul odors, etc., can scarcely escape from them; besides, most of the mills are revolved by mules, which adds to their uncleanliness.

The olive oil must be preserved with great care, since Th. de Saussure has shown that the absorption of atmospheric oxygen, which is favored by heat, has a tendency to turn it rancid. The expressed oil is filtered, and immediately transferred into large cooled stoneware jugs, in which it gets cold very soon, and will keep unaltered for two years.

"Waste-oil" (*huile d'enfer*) is the name given to all oil in the Pro-

vence which is collected on the surface of the pits. It is treated with caustic soda and with hot water, in order to remove the fatty acids, and then enters commerce as lubricating machine-oil. It is greatly valued for oiling machinery, and also for wool.

CINCHONA CULTURE FOR THE PACIFIC COAST.

Mr. Willis Weaver, of Bogota, South America, has written a long letter to the Department of Agriculture, advocating the introduction of the cinchona tree in California.

After reviewing the conditions under which the cinchona tree thrives naturally in South America, and, under cultivation, in India, Mr. Weaver says: "The cinchona seems to seek a dry soil, but a climate affording plenty of rain in certain parts of the year. The coasts of Northern California and Oregon would fulfill the conditions as to moisture; the slopes of the mountains would probably furnish hilly ground very similar to that occupied by the tree in its native habitat; while I believe that the temperature would admit of its cultivation even north of the mouth of the Columbia. It is also uncertain as to how far any undue dryness of the atmosphere may be overcome by irrigation. The surprising results already attained in the cultivation of the trees prepare us to expect further advances, and this may be one of them as naturally as anything else.

"It is well known that the barks produced under cultivation are much superior to the natural bark, as the process of mossing the tree causes a remarkable development of the alkaloids in which their virtue consists; also, that the cultivated trees are not destroyed. A strip is taken off reaching the length of the trunk and one-third its circumference. The wound is then dressed with straw matting, and kept wet until the bark forms anew. The next year another strip is taken, and so on, indefinitely. I am told that the harvest begins when the tree is five years old, but am not in a position to verify the statement.

"I have calculated roughly, according to the prices of land snd labor here, that a plantation of a hundred acres might be put in at less than $1,000 an acre, covering all outlay, or say $1,500 to cover interest and all contingencies."

A yield of $8,000 an acre has been reported from Indian plantations. Mr. Weaver is convinced that with a wise choice of sites and judicious treatment, together with a careful selection of the proper varie-

ties, the cinchona tree could be cultivated in many parts of the Pacific coast, and probably in New Mexico; that if irrigation can be made to supply the place of a naturally moist climate, the cultivation can be carried into a large part of the Colorado Valley and Texas, as well as into Northern Georgia and Alabama, and thence north along the southern slope of the Blue Ridge. He would not be surprised if the hardier varieties were found to grow even in Virginia and Colorado and in Arkansas, in favored situations on the southern slopes of the Ozark mountains.—*Sci. Amer.*, Feb. 28, 1880.

CHEMICAL NOTES.

By Prof. Samuel P. Sadtler.

Inorganic Chemistry.—*The Chemical Cause of the Poisonous Nature of Arsenic.*—The old theory proposed by Liebig that arsenous acid, like corrosive sublimate, formed an insoluble compound with albumen, and hence decomposes the animal tissues, has been given up since it has been found experimentally that these supposed albuminates are not formed by the action of arsenous acid or its salts. Binz and Schulz find that arsenic acid, digested with egg-albumen and fibrin of warm-blooded animals, at the temperature of the body, is reduced. They find that the mucous membrane of the stomach, the liver and the undecomposed protoplasm of plants *reduce* arsenic acid and also *oxidize* arsenous to arsenic acid. The authors find in this alternate oxidation and reduction, which the two arsenic acids undergo when in contact with the albumen molecules, the reason for the decomposing effect which arsenic in its several forms exerts upon the tissue, or, in other words, for its poisonous character. They draw an analogy with the poisonous effects of nitrogen dioxide, which is also a carrier of oxygen, passing into nitrogen tetroxide, and then, in the presence of water, regenerating nitrogen dioxide. Phosphorus and antimony, they consider as showing similar characters.—*Ber. der Chem. Ges.*, xii, p. 2199.

Arsenic in Grape Sugar.—Clouet and Ritter have found, independently, that all commercial grape sugar contains arsenic in small quantities; according to Ritter the amount varies from ·0025 to ·1094 gram per kilo. The arsenic is probably derived from the sulphuric acid used in the manufacture.—*Bied. Centr.*, 1879, p. 477.

On the Preparation of Sub-nitrate of Bismuth Free from Arsenic.—R. Schneider has found that sub-nitrate of bismuth, free from arsenic,

can be made from bismuth containing arsenic by adding the coarsely powdered metal gradually to five times its weight of nitric acid, heated to between 75° and 90°C., and by application of heat, keeping the reaction going actively. There is formed by the oxidation of the arsenic, bismuth arsenate, which Schneider has found is insoluble in a concentrated solution of bismuth nitrate, and separates out as a white powder. After the settling out of the arsenate, the solution is filtered through asbestos, evaporated to crystallization, and the neutral salt so gotten changed into the basic salt by the usual method.—*Jour. für Pr. Chem.*, p. 20.

Combustion of Hydrogen Sulphide Gas in Nitrous Fumes.—Kessel describes an interesting experiment in which this combustion is beautifully shown. In a half-liter flask 60 to 80 cc. of cold fuming nitric acid (1·53 specific gravity) is poured, and a rapid stream of sulphuretted hydrogen gas, purified by passing through a wash-bottle, is passed into the acid. This becomes rapidly heated and the flask is filled with red fumes. If now the delivery-tube of the gas be withdrawn from the acid, and slowly raised to the mouth of the flask, the hydrogen sulphide gas ignites and burns with a bluish flame, tinged with a reddish-yellow color. If the flame becomes extinguished the addition of fresh acid calls it forth again. The neck of the flask becomes filled during the combustion with white sulphuric acid vapors, while the space below the flame remains filled with red fumes. If the combustion proceed properly very little, if any, sulphur separates out.—*Ber. der Chem. Ges.*, xii, p. 2305.

Organic Chemistry.—*Digestive Ferment of Carica Papaya.*—A description of this, the so-called melon tree, appeared in this journal November, 1879, p. 559. A. Wurtz and E. Bouchut have made an examination of the juice obtained from incisions in the bark of the tree. This juice separates spontaneously into two portions, an insoluble pulp and a limpid, colorless liquid. From the latter of these alcohol precipitates a body which, after suitable purification, presents the characters of a strong digestive ferment, resembling that secreted by carniverous plants. When pure, it is an amorphous white powder, entirely soluble in water—a property which shows the absence of vegetable albumin. It contains 10·6 per cent. of nitrogen. Its aqueous solution has an astringent taste, gives an abundant precipitate with alcohol, also with nitric acid, soluble in excess to a yellow liquid; acetate of lead and tannin also precipitate it from its solution. Placed in contact with

moist fibrin in slightly acid, neutral or slightly alkaline solution, it dissolves large quantities of that substance, the fibrin first softening, then disintegrating without swelling and dissolving, leaving a residue of dyspeptone. The above-mentioned pulp, even after careful washing, presented similar characters.—*Compt. Rend.*, No. 89, p. 425.

Action of the Sap of Carica Papaya.—L. Wittmak finds that the sap of *Carica papaya* contains a ferment analogous to pepsin, from which it is distinguished by its acting upon milk quickly without addition of acid. On boiling a solution of the sap, or on adding mercuric chloride, iodine or mineral acids, a precipitate is formed. This substance resembles pepsin in being precipitated by neutral lead acetate, but not by potassium ferrocyanide or ferric chloride. One milligram of the dried sap coagulated 10 cc. of milk at 35°.—*Journ. Chem. Soc.*, Nov., 1879, from *Bied. Centr.*, p. 475.

Change of Piperidina into Pyridin.—Within the last few years pyridin derivatives have been gotten from a number of the alkaloids, as, for example, from the several quinia bases, from nicotina and from berberina. W. Koenigs has now obtained pyridin, C_5H_5N, from piperidina, $C_5H_{11}N$, the base which is produced at the same time with piperic acid by the decomposition of the alkaloid piperin. This change was effected by heating the piperidina for some hours with an excess of sulphuric acid to about 300°C. During the process a steady evolution of sulphurous acid gas took place, but no coaking was observed. The base extracted with ether, and purified, was converted into the platinum double salt, and analyzed.—*Ber.*, xii, p. 2341.

Action of Potassium Ferricyanide upon Morphia.—Polstorff has examined the product of the oxidation of morphia by potassium ferricyanide, and has obtained a well-crystallized very stable base of the composition $C_{34}H_{36}N_2O_6$. This he names oxydimorphia, considering that it has formed by the elimination of one atom of hydrogen from each of two molecules of morphia, $C_{17}H_{19}NO_3$, and the linking together of the residues, thus: $\begin{matrix} C_{17}H_{18}NO_3 \\ | \\ C_{17}H_{18}NO_3 \end{matrix}$ He prepared and analyzed the sulphate and the chlorhydrate of this base.—*Ibid.*, xiii, p. 86.

Other Methods of Formation of Oxydimorphia.—Polstorff and Broockmann have also repeated Schützenberger's ("Bul. de la Soc. Chim.," 1865, No. 4, p. 176) preparation of oxymorphia by the action of silver nitrate upon morphia hydrochlorate, and find that the base so obtained

is in reality oxydimorphia, identical in all respects with that prepared by themselves in the way before mentioned. They also examined the action of potassium permanganate upon morphia in the presence of alkaline carbonate. Flückiger ("Handbook of Pharmac. Chem.," p. 375) states that oxymorphia is obtained under these circumstances. The authors find that this product is also oxydimorphia, as is proved by the analysis of the base, the sulphate and the hydrochlorate. They have also prepared the oxydimorphia by the action of atmospheric air upon morphia when in ammoniacal solution. A very dilute solution of morphia hydrochlorate (1 to 600) is supersaturated with ammonia solution, and then allowed to stand in open vessels for a long time in contact with air. The crystalline deposit, purified by crystallization, proved to be identical with those before described.—*Ber. der. Chem. Ges.*, xiii, p. 86.

On the Preparation of Artificial Alkaloids.—A. Ladenburg has followed up his formation of artificial atropia (this journal, 1879, p. 398), by a comparison of its properties with those of the natural alkaloid, showing entire correspondence. These results, awakened the hope that by the treatment of other tropin salts with hydrochloric acid other bases analogous to atropia might be obtained. This hope has been fulfilled, and it seems possible to form a whole class of artificial alkaloids which the author calls tropeins. He has prepared *salicyl-tropein*, *oxytoluyl-tropein* and *phtalyl-tropein*. Of these the salicyl-tropein is a weak poison, and has no effect upon the pupil of the eye. Oxytoluyl-tropein, or homatropin, as he proposes to call it, however, acts upon the pupil of the eye almost as strongly as atropia itself, and in its mydriatic action it seems to exceed in many cases atropia, so that it may have a therapeutic value. The phtalyl-tropein has not been sufficiently studied as yet. The author considers it likely that hyoscyamia and duboisina also belong to the class of tropeins. These he proposes to investigate immediately, as also belladonia.—*Ibid.*, p. 104.

Miscellaneous.—*Ancient Samples of Butter.*—Wigner and Church read a paper before the English Society of Public Analysts on this subject. The first sample was of Irish bog butter, and its probable age was judged to be about one thousand years. The sample contains nearly 4 per cent. of curd, which consisted partly of vegetable matter derived from the bog, but contained quite enough animal matter to prove that the butter had been originally made from animal milk and was not a mere artificial fat. Its fatty character has, however, been

entirely changed, and the glycerides, of which the fat had originally consisted, had been decomposed so as to leave simply a mixture of the fatty acids, which constituted the acid portion of animal fats. The butter had in fact become changed into a substance closely resembling, in character and composition, the substance of which good composite candles are made. The result is singular as showing that length of time, combined with exposure to moisture, will effect the decomposition which the manufacturer of stearin has to effect by the agency of heat and acid. The other and older sample of butter had been taken from an alabaster vase in an Egyptian tomb; it had evidently been melted and poured into the vase, and carefully sealed over. This sample was probably about 2,500 years old, but the preservation had been so perfect that it was only slightly rancid and had fully retained the chemical properties of genuine butter, the fat not having been decomposed to any sensible extent. This sample possessed a decided taste and smell of butter, while the sample from the bog was cheesy rather than buttery in smell.—*Chem. News*, Jan. 23, 1880.

ON THE RELATIONS OF THE ACIDS OF NITROGEN TO SULPHURIC ACID.

By G. Lunge.

Our knowledge of this relation is not by any means complete. It is well known that nitrous acid, either in the liquid or gaseous form, or produced nascent from the union of nitrogen dioxide with oxygen, is dissolved by sulphuric acid of about 1·7 specific gravity; but the behavior of nitrogen tetroxide toward sulphuric acid is not accurately known. The author has shown that it is dissolved by sulphuric acid, forming nitrosulphuric and nitric acids; but according to Weber and Winkler, nitrogen tetroxide is dissolved as such by sulphuric acid of 56°B., producing a reddish-yellow solution, which, when heated, gives off nitrogen tetroxide with violent ebullition, and leaves a liquid having the properties of nitrosulphuric acid. Winkler stated that 28·072 grams of sulphuric acid at 60°B. absorbed 7·397 grams of nitrogen tetroxide, but that on heating gently, the latter was entirely expelled. Weber describes the effects of nitrogen tetroxide on sulphuric acid of different specific gravities, but only qualitatively: thus, sulphuric acid at a specific gravity of 1·7 absorbs nitrogen tetroxide without becoming colored; hence it was assumed that the latter was decomposed; at a

specific gravity of 1·55 the sulphuric acid becomes yellow, and hence it was supposed that the greater part of the nitrogen tetroxide was simply dissolved. Acid of 1·49 specific gravity takes a greenish-yellow color; acid of 1·41 specific gravity takes an intense green color; acid of 1·31 specific gravity becomes blue and liberates nitrogen dioxide, which escapes with violent ebullition on gently heating. The green and blue colors were supposed to be due to the formation of nitrous acid, the nitrogen tetroxide having been decomposed into that substance and nitrogen dioxide. As these results are very important to vitriol manufacturers, the author studied them more accurately, and, as far as possible, quantitatively. The nitrogen tetroxide, prepared from dry fused lead nitrate, was measured off from a burette, and mixed with pure sulphuric acid, which had been diluted to different strengths with water, and the effects of heat upon these mixtures were also noted.

The following are given as examples of the method employed and of the results obtained by the author in carrying out the experiments:

100 cc. sulphuric acid of 1.84 specific gravity, to which was added 2 cc. = 3 grams liquid nitrogen tetroxide, gave a colorless solution with a very feeble odor, recalling that of ozone. The amount of nitrogen dioxide evolved from 1 cc. of this solution in the nitrometer was determined, and also the amount required to decolorize 10 cc. seminormal potassium permanganate solution. From the results, the author calculates that his nitrogen tetroxide contained of pure nitrogen tetroxide 93 per cent., and of nitric acid 7 per cent.; but he argues, as in reality the nitrogen tetroxide does not exist as such in the sulphuric acid, but has undergone a decomposition, one part of the tetroxide having been converted into nitric acid at the expense of the oxygen of the other part, whilst the part which has been robbed of its oxygen remains as nitrous acid in combination with the sulphuric acid; then assuming that this lower oxide takes the oxygen from, and decolorizes the potassium permanganate, this would give 46·5 per cent. as nitrous acid, and 53.5 per cent. as nitric acid. The other calculations are made on this supposition, that is, it is first assumed that all the nitrogen tetroxide remains as such, and the deficiency in the theoretical amount of oxygen required is calculated as nitric acid; but if, on the contrary, the amount of oxygen required be less than that found by the permanganate process, then he assumes that no nitric acid is present, but that nitrous acid must have been originally present as an impurity.

(I.) The acid was heated to 280°, and kept at that temperature for

one hour; any free nitrogen tetroxide, if it were present, must have been thus expelled. When the temperature rose to 200°, a little red vapor was evolved, and the liquid acquired a golden-yellow color; but on cooling, it again became colorless.

On analysis the author calculated that 77·9 per cent. of the nitrogen present existed as N_2O_3, and 21·1 per cent as HNO_3; there is consequently, he says, a large amount of the nitric acid driven off and another part changed into nitrous acid.

(II.) On continuing to heat for one hour longer, a further change took place of the same kind, and 94·5 per cent. of the nitrogen remaining existed as N_2O_3, in combination with the sulphuric acid forming nitrosulphuric acid; whilst 5·5 per cent. remained as HNO_3, and 18 per cent. of the nitrogen originally present having been expelled by the heating.

(III.) Another experiment was made by adding pure nitric to pure sulphuric acid, and analyzing the resulting mixture, but no change was found to have taken place.

(IV.) On boiling the mixtures for half an hour, however, red fumes were given off, and the whole of the nitrogen present was converted into nitrous acid, which was found in combination with the sulphuric acid.

That nitric acid is thus broken up has also been demonstrated in another way by Winkler, who collected the oxygen which was evolved from the decomposition.

The author did not find the same result as Winkler with sulphuric acid of 66°B. above mentioned, and he explains this by assuming that Winkler employed so much nitrogen tetroxide that it left a large excess beyond that which could combine with the sulphuric acid as nitrous acid: hence the sudden and violent ebullition and liberation of nitrogen tetroxide on heating the mixture.

2 cc. nitrogen tetroxide added to sulphuric acid of 1·805 specific gravity was broken up into practically the same proportions of nitrous and nitric acids as in the first experiment, with acid of 1·84 specific gravity.

Other experiments are described in which sulphuric acid of 1·75 specific gravity was mixed with nitrogen tetroxide and then heated (*a*), so that the vapor evolved might at once escape, and (*b*) where a long tube was attached to the flask in which the mixture was heated, so that the vapor might condense and flow back again to the acid in the flask. In

(*a*) nitrous acid, but no nitric acid was found, whilst in (*b*) nitric acid was present but no nitrous acid; this is explained by the fact that it requires concentrated sulpuric acid to combine with and retain the nitrous acid; and in (*a*) the acid became concentrated by evaporation, whilst in (*b*) it remained of about the same strength, and was unable to retain the nitrous acid.

Again, when the mixture was heated on a water-bath at about 95°, no such changes occurred.

As Winkler found, that on heating his mixture of acid of 60°B. with nitrogen tetroxide, the latter was evolved, he presumed that it existed as a mechanical mixture with the acid. This the author denies, stating that had Winkler examined the acid after boiling, he would have found that it contained nitric acid, and that the nitrogen tetroxide had really undergone decomposition; and further, that he must have heated it considerably above the temperature of boiling water, otherwise no change would have resulted, and no red fumes would have been liberated.

When the amount of nitrogen tetroxide added is in excess of that required to form nitrosulphuric acid, the author is uncertain from analysis whether it exists in the acid in the form of nitrous acid or of nitrogen tetroxide.—*Ger. Chem. Soc.*, Feb. 1880, p. 91, from *Dingl. polyt. J.*, 233, 155 to 165.

CONTRIBUTION TO THE CHEMISTRY OF GURJUN BALSAM.

By Eduard Hirschsohn, Mag. Pharm.

In my work, "Contributions to the Chemistry of the more important Gum Resins, Resins and Balsams,"[1] will be found experiments which were made with a liquid sold as gurjun balsam. The sample I examined did not solidify on heating, showed a slight fluorescence, and did not give with nitric and sulphuric acids the violet coloration mentioned by Flückiger.[2] As no sample of the balsam described by Flückiger was at my disposal, I was unable at the time to determine

[1] "Archiv der Pharmacie," vii, 6, 1877.

[2] Flückiger proceeded as follows: One drop of the balsam is dissolved in twenty drops of bisulphide of carbon, and one drop of a previously cooled mixture of concentrated sulphuric and nitric acids added and the whole well shaken. "Jahresbericht für Pharmacognosie," etc., 1876, p. 220.

whether any difference, other than the above-mentioned, could be detected between the two specimens by means of the reagents I had employed in the quoted work. Last year Professor Hamberg presented a sample of the balsam to the Museum of the Pharmaceutical Institute of this town, and the experiments made with this specimen, kindly placed at my disposal by Professor Dragendorff, and a sample of gurjun purchased at a neighboring chemist's, yielded the following results:

Both samples showed a strong fluorescence in green, and formed on standing a deposit consisting entirely of crystals, the quantity of which in the last named sample was small in comparison to that received from Professor Hamberg.

On heating in a test tube, the balsam from Professor Hamberg became quite solid, so that the tube could be inverted without any fear of the contents running out, while with the second sample a solidification appeared only after heating for a considerable length of time, and even then it did not become so thick as the first named sample.

Alcohol (95 per cent.) dissolved both samples with the exception of a white residue.

Ether (*pure*) dissolved also incompletely. The cloudy mixture became on the addition of an equal volume of alcohol nearly clear, and the greater part of the deposit was taken into solution.

Ether and Alcohol (equal volumes) gave an opalescent solution.

Chloroform dissolved, forming a clear liquid.

Solution of Bromine (1 part of bromine in 20 parts of chloroform) added to the chloroformic solution of the balsam (3 drops balsam, 1 cc. chloroform and 5 drops bromine solution) produced at first no appreciable alteration, but after a time the mixture became intensely green-colored and retained this color tolerably long.

Bisulphide of Carbon gave a cloudy solution with the balsam and the reagent recommended by Flückiger produced a deep violet coloration, which in Hamberg's sample was permanent for hours, whilst in the second sample it disappeared in the course of a short time.

Alcoholic Solution of Acetate of Lead (a saturated solution of acetate of lead in 95 per cent. alcohol) produced in the filtered alcoholic solution no change.

Alcoholic Solution of Ferric Chloride (10 per cent. in 95 per cent. alcohol) colored the alcoholic solutions of the balsam darker.

Concentrated Sulphuric Acid dissolved the balsams with yellowish-brown color, and this solution with five to ten volumes of water gave a white milk; with three to five volumes of alcohol, a flesh-colored mixture passing into violet.

Alcoholic Hydrochloric Acid (*i.e.* 95 per cent. alcohol saturated with gaseous HCl.) yielded with the balsam a yellowish-red tincture, which on the addition of alcohol became violet.

Petroleum Spirit dissolved incompletely.

Chloral Reagent[1] colored both balsams, as well as the residue left on evaporating the petroleum spirit solution, deep green.

To allow of an easy comparison of the reactions previously, and those now obtained, I have tabulated the results as follows:

	Hamberg's Gurjun Balsam.	Gurjun Balsam, "Archiv d. Pharm.," vii, 6, 1877.
Ether, . . .	Solution incomplete,	Incomplete.
Alcohol, . .	" "	"
Ether-Alcohol, .	" opalescent.	Perfectly clear.
Chloroform, .	" clear.	Incomplete.
Solution of Bromine,	Green coloration.	Yellowish coloration.
Chloral Reagent,	Green.	Green.
Flückiger's Reagent,	Violet coloration.	Bright yellow coloration.

As will be seen from the above table the two samples of true balsam now examined differ from the one previously experimented upon: (i) in the Flückiger reaction; (ii) they are completely soluble in chloroform, and (iii) give with solution of bromine a green coloration. The slight difference between Professor Hamberg's sample and that from a chemist in this town is due, I am convinced, to the presence of alcohol in the latter, for if it be freed therefrom by distillation the two give identical reactions.

The true gurjun balsam differs from copaiva balsam:

(i) in the violet coloration produced by Flückiger's reagent in the bisulphide of carbon solution;

(ii) in the incomplete solubility in ether (copaiva balsam gives a clear solution;

(iii) in the negative behavior of acetate of lead to the alcoholic solution. (Copaiva balsam gives a cloudiness which on warming disappears.)—*Pharm. Jour. and Trans.*, Jan., 1880, p. 561 and 606.

[1] "Archiv der Pharmacie," vii, 6, 1877.

THE TESTING OF PEPSIN.

By A. Petit.

Recent investigation having directed attention to the ferments which preside over the transformation of the various alimentary matters, it appeared to me that it would be useful to define the present state of this interesting question, and particularly to state the method of testing most convenient to be adopted for these ferments, of which the medical employment is becoming more and more common.

In commencing this study I would recall that all the facts relative to the action of pepsin and diastase have been explained with the greatest clearness by M. Mialhe. Upon reperusing the memoirs of 1845 and 1846 it will be seen that his opinions, sharply discussed at the time when they appeared, are now accepted by all investigators occupied with the phenomena of digestion. On the present occasion I will deal only with certain facts connected with the transformation of nitrogenous foods by pepsin.

These substances—albumen, fibrin, casein, etc.—submitted to the combined action of pepsin and an acid, are transformed at first into a compound, named caseiform albumen by M. Mialhe, and more recently syntonin; then into another substance—the ultimate product of the stomachic digestion of albuminoid matters—the albuminose of Mialhe, or the peptone of Lehmann. According to their source, these peptones, although they are very probably isomers, differ from one another by their action upon polarized light.

M. Henninger thinks that the peptones are formed by the hydration of albuminoid matters, and as they combine indifferently with acids and bases he considers them as weak acid amides. M. Meissner divided the products of transformation of albuminoid matters into parapeptones, metapeptones, dyspeptones and peptones α, β and γ; but these divisions can no longer be accepted in the present state of science.

The essential characters of peptones are those of not being precipitated by saturation of the acid liquids holding them in solution, or by nitric acid, or by ferrocyanide of potassium added to acetic acid. They are mostly soluble in water, even after having been precipitated from their aqueous solution by excess of alcohol.

The test by nitric acid has a prime importance, as will appear subsequently. It permits, in fact, of ascertaining rapidly whether the transformation is more or less advanced. When nitric acid, added drop

by drop, to a peptic solution of albumen no longer gives a precipitate it may be concluded that all the albumen is transformed into peptones.

The report upon pepsin presented in 1865 by M. Guibourt to the Société de Pharmacie, did not sufficiently bring out the importance of this reaction. M. Guibourt thought that the solution of the fibrin was sufficient, and it appears (p. 102) that 1 gram of pepsin prepared by the Commission, in presence of 8·40 grams of lactic acid and 20 grams of water, very incompletely modified 12 grams of fibrin after heating for twelve hours at 40 to 45°C. The solution was in fact semigelatinous, and was strongly precipitated by nitric acid. Certainly, at the present time, such a pepsin would be considered to be of mediocre quality.

Rapid solution indicates that the pepsin is of good quality, but between this phenomenon and that of transformation the difference is essential.

Let us now examine the various methods of testing that have been proposed for pepsin, and see which is most suitable for adoption.

1. *Test by Coagulation of Milk.*—This process ought to be rejected. M. Guibourt had, in 1865, come to the conclusion from experiments made on rennet, that the principle in rennet, which produces the coagulation of milk, is not that which dissolves and transforms fibrin. I have observed also that a pepsin, twelve times more active than another prepared from calves' rennet, was much less active than the latter in respect to the coagulation of milk. It is probable that this special action is due to a particular ferment.

2. *Test by Coagulated White of Egg.*—This test is universally adopted in England and in Germany. I have made some experiments to determine:

(*a*) The temperature most favorable to solution.

(*b*) The action of various acids.

(*c*) The acidimetric strength which it is advisable to give to the liquors.

With respect to temperature, experiments were made at from 30° to 80°C. Even at elevated temperatures the action of acidified pepsin is produced, but the maximum occurs at 50°.

With liquors containing 2 to 15 per mille of acetic or butyric acid, I have been able to convince myself that in the presence of these acids pepsin is without action upon coagulated white of egg. Tartaric, lactic, and especially hydrochloric acids, on the contrary, facilitate the action of pepsin.

The solution of tartaric acid ought to be of the strength of about 10

grams, and that of lactic acid from 8 to 12 grams per liter. With hydrochloric acid, the digestion of white of egg takes place very well in liquors containing from 1 to 3 parts per 1,000 of real acid, the most favorable acidity being 1½ part per 1000.

In the study of similar phenomena it ought never to be forgotten that the digestion in the stomach goes on at a temperature of about 40°C. It is, therefore, especially at this temperature that the test of artificial digestions should be made. It might happen, in fact, that an acid solution, acting on albumen at 50° or 60°C., would be less active at 40°C. This is what takes place with lactic acid, which at a concentration corresponding to 2 or even 3 per 1,000 of real hydrochloric acid leaves white of egg in great part undissolved at a temperature of 40°C., whilst hydrochloric acid of 1 per 1,000, in the same conditions of time and temperature, dissolves and transforms all the albumen.

In these facts is found the experimental demonstration that the free acid of the gastric juice is hydrochloric acid. This is a fact, moreover, gained to science by the remarkable researches of M. Richet, who has proved that the acidity of the gastric juice is about 2 per 1,000; that it is due solely to hydrochloric acid, and that if lactic acid is found there it is the product of a special fermentation which the food has undergone in the stomach.

The more that artificial digestions are studied the more evident becomes the similarity which exists between these phenomena and those of the stomachal digestion. No doubt, the stomach absorbs during the digestive period a portion of the liquids and of the peptones they contain, and this, according to Schiff, favors digestion considerably. The movements in the food which this initiates facilitate the action of the gastric juice, the secretion of which is uninterrupted; but it is no less true that in experiments *in vitro it is easy to equal and even to surpass the digestive power of the stomach.*

We know that the activity of the gastric juice is always maintained within certain limits, the secretions of the stomach rapidly re-establishing an equilibrium when this is more or less destroyed. The specific action recognized in hydrochloric acid throws light on the rationale of certain medicines and the troublesome influence exercised by some substances upon the act of digestion. As has been justly remarked by M. Richet, in the case of abnormal fermentations there is produced a great excess of lactic, acetic and buytric acids. Hydrochloric acid is no longer secreted, but instead, a less active acid, lactic acid, or inactive

acids, acetic and butyric. The utility will hence be understood of employing in such a case alkalies, which in saturating the free acids induce a fresh secretion of hydrochloric acid and thus restore to the gastric juice all its digestive power. It will be understood also that to attain the same object sometimes solutions of hydrochloric acid and sometimes of the alkaline bicarbonates have been given with success. It is necessary, besides, in this case, that the acetates and butyrates should be eliminated by stomachal absorption; otherwise they would be decomposed and the inactive acids again set free by the hydrochloric acid secreted normally or administered as medicine.

To return to the testing of pepsin by coagulated white of egg, one objection that may be brought against it is that it does not establish a sufficient gradation in the transformations. However this may be, the method of operating is a follows:

An egg is kept in boiling water during half an hour, and the very coherent white is then passed through a moderately fine strainer. 5 grams of this coagulated albumen, put into contact at 40°C. with 25 grams of hydrochloric acid containing 1·50 of HCl per liter, ought to be dissolved in four to five hours by 0·10 gram of pepsin of good quality. It is necessary to agitate the flask every half hour.

Test by Fibrin.—This appears to me to present great advantages over the preceding. The phenomena are very distinct and very comparable. Whatever may be the origin of a ferment, in the same conditions of time, temperature and acidity of the menstruum, its exact equivalence can be determined by relation to other specimens. The following are the conclusions I have arrived at with respect to the best conditions for the transformation of fibrin.

The temperature of 50°C. is that of the maximum. The same pepsin is about four times less active at 40° than at 50°C.

The acid most favorable to the transformation is hydrochloric acid. In order to approach the action of this acid it is necessary to employ relatively large quantities of lactic or tartaric acids, about 25 to 30 grams per liter. With lactic acid in the proportion of 20 grams per liter the action is five times less than that which corresponds to a 3 per 1,000 solution of hydrochloric acid. With hydrochloric acid the most favorable action is obtained with a solution containing between 2 and 5 grams of real HCl per liter.

To recapitulate, it appears that the acidity of the gastric juice does not exceed 2 to 3 grams per liter of acid expressed as HCl, which

would give 5 to 7·5 grams of acid expressed as lactic acid, whilst the action would be much weaker in the presence of the latter solvent.

I would also remark that the acidity of the 1 per 1,000 in HCl, which is favorable to the solution of coagulated albumen, is not sufficient for the easy transformation of fibrin. In order to approach physiological condition I would propose, therefore, to employ 1·50 gram of real HCl per liter in the testing with coagulated white of egg and 3 grams per 1,000 for testing with fibrin.

It may be asked whether it is not possible to render the testing of pepsin more practical by diminishing the time of operating. Nothing is more easy. In heating during six hours instead of twelve about twice as much pepsin is required for the transformation. Again, in heating during six hours at 40°C., instead of twelve hours at 50°C., nearly eight times the quantity of pepsin is required to obtain the same result.

This great influence exercised by temperature renders it necessary that a standard for operating should be fixed in an exact manner. The Commission of 1865, in recommending to heat to from 40° to 45°, was not sufficiently precise upon this important point.

I have stated that there is an essential difference between the solution of fibrin and its transformation; the following experiments demonstrate this very clearly:

A pepsin prepared in my laboratory, which dissolved and transformed in twelve hours at a temperature of 50°C. six hundred times its weight of fibrin in a liquor containing 4 per 1,000 of real HCl, dissolved in the same conditions:

1,200	times its	weight	of fibrin	in 1 hour.
2,400	"	"	"	1 hour 10 minutes.
4,800	"	"	"	1 hour 15 minutes,
9,600	"	"	"	1 hour 45 minutes.
19,200	"	"	"	2 hours 10 minutes.

It was not thought necessary to carry the experiment further.

An identical experiment was made with lactic acid in the proportion of 0·40 gram to 25 cc. or 16 grams per liter. Although the same pepsin transformed in these conditions only one hundred times its weight of fibrin, instead of six hundred times, as in the preceding experiment, it was found that it dissolved—

1,200	times its	weight	in	30 minutes.
2,400	"	"		1 hour 15 minutes.
4,800	"	"		1 hour 30 minutes.
9,600	"	"		4 hours.
19,200	"	"		5 hours.

It is necessary to add that in flasks differing from the others only in the absence of pepsin no liquefaction took place.

To test a pepsin, therefore, I should take of hydrochloric acid of the strength of 3 grams of HCl per liter 25 cc.; then 5 grams of moist fibrin strongly dried, and add to several flasks so prepared quantities of pepsin ranging from 0·10 to 0·60 gram. These should be heated to 50°C., for it has been seen that four times as much pepsin would be required at 40°C., which would be an useless waste. Agitate every half hour until the complete solution of the fibrin, and then every hour.

A good pepsin ought not to give a precipitate with nitric acid after twelve hours' heating in flasks containing 25 to 30 centigrams, and after six hours in those containing 50 to 60 centigrams. The nitric acid should be added drop by drop to 10 cc., for example, of the solution, and not the slightest turbidity should be produced in the liquor at the moment of adding it.

In these experiments I have for some time used a fibrin of mutton washed until it has become white and preserved in pure glycerin. When required for use it is washed with plenty of water.

In subsequent communications I shall show the action which a number of bodies exercise upon the peptic and diastastic ferments.—*Pharm. Jour. and Trans.*, Jan. 24, 1880, from *Jour. de Pharm. et de Chimie*, 5th ser., vol. i, p. 82.

ANTIDOTES.

By Dr. Th. Schlosser.

Translated from "Ztschr. d. Allg. Oest. Apoth. Ver.," 1880, Nos. 1 and 2, by Louis von Cotzhausen, Ph.G.

In order to supply the demand for a reliable table of antidotes the author publishes the following, and at the same requests others to assist in improving and completing the formulas.

General Remark.—An emetic is unnecessary when the poisoned patient has already vomited freely.

Antidotes for:

1. *Aconitia.*

℞ Cupri sulph., . . 1·0
Aquæ dest., . . 40·0
Dissolve.
S: Emetic; give half, and balance, if necessary, in five minutes.

Then:

℞ Acid. tann., . . 4·0
Aquæ dest., . . 200·0
Syr. simpl., . . 50·0
M. S: Tablespoonful every five minutes.

2. *Excessive Etherization.*

℞ Aquæ ammon., . . gtt. 15
Aquæ dest., . . 20·0
S: To be taken at one dose.

℞ Aquæ ammoniæ, . . 30·0
S: For smelling. (Cold water must be freely applied and fresh air.)

3. *Caustic Alkalies and Alkali Carbonates.*

℞ Acidi tartaric., . . 10 0
Aquæ font., . . 1000 0
M. S: Drink a tumblerful at once; then every five minutes a dessertspoonful of almond oil, with five tablespoonfuls of the tartaric acid solution. (This is sufficient for 100 grams of a 5 per cent. solution of alkali.)

4. *Caustic Lime and Calcium Salts.*

℞ Magnes. sulph., . . 20·0
Aquæ dest., . . 100·0
Syr. simpl., . . 40·0
Dissolve.
S.: Take at once.
Then:
℞ Ol. amygd. dulc., . . 20·0
Pulv. gum. acaciæ, . 10·0
Aquæ dest., . . 15 0
Syr. simpl., . . 100·0
M. D. S.: Two dessertspoonfuls every quarter hour.

5. *Alcohol Intoxication.*

℞ Pepsini, . . . 2·0
Aquæ dest., . . 200·0
Acid. mur., . . 1·00
M. D. S.: Tablespoonful every five minutes.

Or

℞ Aquæ ammon., . . gtt. 10
Aquæ dest., . . 150·0
Syr. simpl., . . 20·0
M. S.: Take at once.

6. *Ammonia.*

℞ Acid. acet. concent., . 10·0
S.: For smelling.

℞ Acet. crud., . . 20·0
Aquæ dest., . . 200·0
Syr. simp, . . . 20·0
M. S.: Tablespoonful every five minutes.

℞ Aceti crudi, . . 50 0
Aquæ dest., . . 200·0
S.: Inhale warm. (Cold washing.)

7. *Anilin Preparations.*

℞ Cupri sulph, . . 1·0
Aquæ dest., . . 40·0
S.: Emetic; half to be taken at once, and the other half in five minutes, if necessary.

℞ Magn. ust. in aq., . . 200·0
D. S.: Tablespoonful every half hour.

8. *Antimonial Preparations and Tartar Emetic.*

℞ Acid. tannic., . . 3·0
Aquæ dest., . . 140·0
Syr. althææ, . . 60·0
M. S.: Tablespoonful every five minutes.

9. *Arsenic Preparations.*

℞ Magn. ust. in aq., . . 200·0
D S.: One-third to be taken at once, then a tablespoonful every five minutes.

10. *Atropia.*

℞ Fol. jaborandi, . . 10 0
Fiat infus. ad colat. . 200·0
S.: Take half at once, then every half hour a tablespoonful with a tablespoonful of wine.

℞ Pilocarpin. mur., . . 0·05
Aquæ dest., . . 2·00
S.: Inject hypodermically.

11. *Baryta.*

Treat like lead salts.

12. *Belladonna.*

Treat like atropia.

13. *Bites by Dogs and Cats.*

℞ Potassæ, . . . 1·0
Aquæ dest., . . 500·0
M. S.: Wash the wound, and keep open with linen dipped into it, until a physician arrives.

14. *Snake Bite.*

See dog bite.

℞ Aquæ ammon., . . gtt. 30
Aquæ dest., . . 150·0
Syr. simp., . . . 30·0
M. S.: Tablespoonful every five minutes.

15. *Lead Salts.*

℞ Aquæ laxat., . . 50·0
Magnes. sulph., . 30·0
Aquæ ferv., . . 100·0
M. S.: Give in two doses, within ten minutes.

Bromine.

℞ Magn. ust. in aqua, . 200·0
S.: Take one-third at once, then a tablespoonful every quarter of an hour.

17. *Brucia.*

Treat like strychnia.

18. *Cannabis Indica.*

Treat like morphia.

19. *Cantharidin.*

℞ Cupri sulph, . . . 1·0
Aquæ dest., . . 40·0
M. S.: Emetic; take one-half immediately, and the balance in five minutes, if necessary.
Then:
℞ Camph., ... 3·0
Muc. g. arabic, . q. s.
Mixt. gummos., . . 300·0
Tr. opii, . . gtt. 10
M. S.: Tablespoonful every five to ten minutes.

20. *Carbolic Acid.*

Use the same emetic as for anilin.
Then:
℞ Magn. ust. in aqua, . 200·0
S.: Take one-half at once, then every quarter of an hour a tablespoonful alternately with
Mixt. oleos., . . 200·0
S.: Tablespoonful every quarter of an hour.

21. *Chloral Hydrate.*

℞ Atrop. sulph., . milligram. 2
Aquæ dest., . . 35·0
M. S.: Give in two doses, in the course of half an hour. (Instead of atropia tincture of belladonna, 2·0 may be given in the same manner.)

22. *Chloroform.*

℞ Aquæ ammon., . . 50·0
S.: For smelling. (Cold douche and ice applied to the head.)

℞ Two Seidlitz powders.
S.: Give one.
If very bad, give
℞ Cupr. sulph., . . 1·0
Aquæ dest., . . 40·0
S.: Emetic; give one-half, and, if necessary, the other half five minutes later.

23. *Chlorine Vapors.*

℞ Aquæ laurocerasi, . . 10·0
Aetheris, . .
Alcohol, 90 per cent, āā 30·0
S.: For smelling and inhaling.

℞ Spir. nitr. dulc., . . 20·0
Syr. althææ, . .
Aquæ dest., . āā 40·0
M. S.: A tablespoonful every five or ten minutes.

24. *Chromic Acid and Chromates.*

℞ Pulv. ferri, . . . 5·0
Linct. oleos., . .
Syr. simp., . . āā 50·0
M. S.: Shake well, and take a dessertspoonful every five minutes, and then two tablespoonfuls of water.

25. *Sulphuretted Hydrogen.*

℞ Spir. ætheris comp., . 30·0
S.: Give ten drops every five minutes in a dessertspoonful of water.

℞ Spir. æth. nitrosi, . . 50·0
S: Pour on a cloth, and apply to nostrils.

℞ Calc. hypochlor, . . 40·0
S.: For smelling. (Fresh air; wash with vinegar.)

26. *Codeia.*

See morphia.

27. *Colchicia.*

See aconitia.

28. *Conia.*

℞ Strych. nitrat., . . 0·01
Aquæ dest., . . 100·0
Tr. opii, . . . gtt. 30
M. S.: Two dessertspoonfuls every quarter of an hour, until one-third is taken; then every half hour, until the second one-third is consumed; then every hour.

29. *Curare.*

℞ Strychn. nitr., . . 0·05
Aquæ dest., . . 5·0
M. S.: Inject.

30. *Potassium Cyanide and Prussic Acid.*

℞ Cupri sulph., . . 2·0
Aquæ dest., . . 28·0
Dissolve.
S.: Emetic; Tablespoonful at once, the balance in five minutes. (Cold water ought to be applied.)

31. *Digitalis.*

Like morphia.

32. *Muscarin.*

See chloral hydrate.

Or

℞ Atrop. sulph, . . 0·01
Aquæ dest., . . 5·0
S.: Use as an injection.

33. *Gratiola.*

Like aconitia.

34. *Helleborus.*

See aconitia.

35. *Hyoscyamus.*

See morphia.

36. *Stings by Insects.*

℞ Aquæ ammon., . . 20·0
S: Apply externally.

37. *Iodine.*

℞ Amyl., . . . 5·0
Mix by triturating with a little water; then pour on
Aquæ fervidæ, . . 100·0
and add
Magn. ust. in aqua, . 100·0
S.: Tablespoonful every five minutes.

38. *Lime.*

See caustic lime.

39. *Oxalic Acid and Oxalates.*

℞ Calcii carb. pulv., . . 50·0
Aquæ dest., . 200·0
M. D. S.: One-half at once; then every ten minutes a tablespoonful. Half an hour later take
℞ Aquæ laxat. Vienn., . 50·0
Sodii sulph. cryst., . 10·0
Dissolve
S.: Take at once.

40. *Carbonic Oxide and Carbonic Acid Gas.*

℞ Aquæ ammon., . . 40·0
S.: For smelling. (Cold ablutions.)

℞ Extr. ergotæ, . . 0·30
Aquæ dest, . . 50·0
S. S.: Dessertspoonful every quarter of an hour.

41. *Creasote.*

℞ Pulv. acaciæ, . . 10·0
Ol. amygd. dulc., . 20·0
Aquæ dest., . . 280·0
Ft. emulsio.
D. S.: Take one-fourth at once, then half a teacupful every ten minutes.

42. *Copper Salts.*

℞ Pulv. ferri, . . . 14·0
Flor. sulph. lot, . 8·0
Syr. simpl., . . 60·0

M. D. S.: Shake well, and give a dessertspoonful every five minutes, alternating with

℞ Magn. ust. in aq., . . 200·0
Mix with white of 4 eggs and add
Aquæ dest., . . 200·0
Syr. simpl., . . 80·0

S.: Half a teacupful every five minutes.

43. *Swallowed Copper Money.*

To children:

℞ Hydrom. infant., . . 20·0

D. S.: Give at once.

To adults:

℞ Aq. laxat. Vienn., . . 50·0
Sodii sulph. cryst., . 10·0

D. S.: Take at once.

44. *Lactucarium.*

As morphia.

45. *Mineral Acids.*

℞ Magn. ust. in aq., . 200 0

D. S.: Take one-half at once; then a tablespoonful every five minutes, alternating with two tablespoonfuls of the following:

℞ Ol. amygd. dulc., . . 20·0
Pulv. acaciæ, . . 10·0
Aquæ dest., . . 200·0
Syr. simp., . . 100·0
Fiat emuls.

46. *Morphia.*

℞ Cupri sulph., . . 1·0
Aquæ dest., . . 40·0

M. D. S.: Emetic; give one-half and, if necessary, the balance in five minutes.

Besides:

℞ Coffeæ tostæ, . . 50 0
F. infusum ad colatur. . 200·0
Acidi tannici, , . 4·0
Syr. simpl., . . 50·0

S.: Teaspoonful every five minutes.

47. *Nicotina.*

In case of nausea in consequence of smoking.

℞ Aceti crudi, . . 50·0
Aquæ dest., . . 200·0
Syr. simpl., . . 50·0

M. S.: One-half at once, and then a tablespoonful every five minutes.

In case of poisoning.

See morphia.

℞ Acidi tannici, . . 4·0
Aquæ dest., . . 200·0
Syr. simpl., . . 50 0

M. D. S.: Tablespoonful every five minutes.

48. *Opium.*

Treat like morphia.

49. *Paris quadrifolia.*

Like morphia.

50. *Phosphorus.*

℞ Cupri sulph., . . 1·0
Aquæ dest., . . 40·0
Solve.

D. S.: Emetic; Give one-half, and, if necessary, the balance in five minutes.

Then:

℞ Ol. terebinth. vetusti, . 30·0
(the older the better), beat with the white of 2 eggs, and add
Aquæ menth. pip., . 250·0
Syr. simpl., . . 50·0
Fiat emulsio.

S.: Shake well, and give one tablespoonful every half hour, until one-fourth of the mixture has been given; then one tablespoonful every hour.

In doubtful cases of poisoning with phosphorus give

℞ Magn. ust. in aqua, . 20·0
Aquæ chlori, . . 120·0

M. D.

51. *Phosphorus—Burns*

℞ Argenti nitr. fus., . . 2·0
Aquæ dest., . . 20 0
Solve.

S.: Apply with a camel-hair brush, and use as a wash.

52. *Pulsatilla.*

Treat like aconitia.

53. *Mercury Salts.*

See copper salts.

54. *Sabina.*

See morphia.

55. *Santonin.*

℞ Cupri sulph., . . 1·0
Aquæ dest., . . 40·0
S.: Emetic; give one-half at once, and, if necessary, the balance in five minutes.

56. *Fungi.*

Like morphia.

57. *Ergot.*

Like sausage poison.

58. *Silver Preparations.*

℞ Sodii chlorid., . . 20·0
Aquæ comm., . . 300·0
M. D. S.: Give one-half at once, and then a tablespoonful every half hour.
Between the doses give:
℞ Mixturæ oleosæ, . .
Mixturæ gummosæ, *āā* 150·0
M. S.: Two tablespoonfuls every half hour.

59. *Stramonium.*

Like opium.

Then:

℞ Morph. mur., . . 0·10
Aquæ dest., . . 10·0
Inject hypodermically.

60. *Strychnia.*

℞ Acidi tannici, . . 3·0
Aquæ dest., . . 140·0
Syr. althææ, . . 60·0
M. D. S.: Tablespoonful every five minutes.

℞ Chloral. hydrat., . . 4·0
Aquæ dest., . . 100·0
Solve.
S.: Tablespoonful every half hour.

61. *Veratria.*

Treat like morphia.

62. *Sausage Poison, or Spoiled Meat.*

℞ Cupri sulph., . . 1·0
Aquæ dest., . . 40·0
S. D. S.: Emetic; give one-half at once, and, if necessary, the balance in five minutes.

Then give:

℞ Aetheris pur., . . 2·0
Aquæ dest., . . 150·0
Tr. opii, . . . gtt. 10
Syr. capill. vener., . 20·0
S.: Tablespoonful every half hour.

63. *Zinc Salts.*

℞ Acidi tannici, . . 4·0
Aquæ dest., . . 140 0
Syr. althææ, . . 60·0
D. S.: Tablespoonful every five minutes.

64. *Tin Salts.*

℞ Pulv. ipecac., . . 2·0
Aquæ dest., . . 100·0
Syr. simpl., . . 20·0
M. D. S.: Emetic; to be taken in two doses inside of quarter of an hour.

Then:

℞ Magn. ust. in aqua, . 200·0
S: Take one-third at once, then a tablespoonful every five minutes, besides plenty of milk.

65. *Petroleum, or Volatile Oils.*

℞ Mixt. oleos., . . 1000·0
S.: Drink continually.

NOTE.—The following are the formulas of several of the preparations ordered above:

Aqua laxativa Viennensis.

Nearly identical with Infus. Sennæ comp., Ph Germ.

℞ Senna, . . . 6 p.
Hot water, . . 48
Infuse for half an hour, strain and add
Manna, . . . 8 p.

Hydromel infantum.

℞ Vienna draught, . . 3 p.
Syrup of manna, . 1

Linctus oleosus.

℞ Acaciæ pulv., . . 1 p.
Aquæ amygd. amar. dil.,
Ol. amygd. expres., . ää 2
Syr. althææ, . . . 3
M.

Magnesia usta in aqua.

℞ Magnesia, . . . 1 p.
Water, . . . 6

VARIETIES.

Wickersheimer's Preserving Fluid.—As originally published by the Prussian Government (see "Amer. Jour. Phar.," 1880, p. 102), the formula is incorrect in giving 10 grams of arsenious acid; the quantity should be 20 grams. (*Phar. Zeitung*, 1879, p. 105.)

J. Martenson ("Phar. Zeitschr. f. Russland") directs attention to the reaction between the alum and the potassium carbonate in the original formula, resulting in the formation of potassium sulphate and rendering tedious filtration necessary, and suggests the following improved formula, in which the alum is partly replaced by borax: Dissolve arsenious acid 20 parts, potassium carbonate 90 parts, sodium nitrate 30 parts, sodium chloride 50 parts, potassium sulphate 40 parts, and borax 100 parts in 6,200 parts of water, and add glycerin 3,000 parts and 90 per cent. alcohol (or methylic alcohol) 500 parts. The arsenious acid and potassium carbonate should be dissolved separately by boiling with a small quantity of the water.

In the hospitals of St. Petersburg, Dr. Sesemann employs a preserving fluid consisting of arsenious acid 10 parts, crystallized carbonate of sodium 20 parts, water 350 parts, and glycerin 650 parts.

A new Method of Administering Koosso.—Of all the remedies for tape-worm none is more certain or efficient than koosso, and many efforts have been made to bring it into such pharmaceutical shape that, while its properties as a tænicide remain unimpaired, it might be administered without repugnance. Dr. Corre, some years ago, proposed the following method, which has been successfully used in many cases: One-half ounce of fresh powdered koosso is treated with 1 ounce of hot castor oil, and afterward with 2 ounces of boiling water by displacement; express, and by means of the yolk of an egg combine the two percolates into an emulsion, and add 40 drops of sulphuric ether, flavoring with some aromatic oil.

This is to be taken at one dose early in the morning, after a previous fast of about 18 hours. The worm is usually expelled dead after 6 or 8 hours.—*Buffalo Med. and Surg. Jour.*, January.

A New Remedy.—With the coming summer we are threatened with the introduction of a new remedy, for which is claimed a wonderful efficacy in cystic and nephritic affections. The *stigmata of maize*, or "corn-silk," is the substance which, for our sins, is to be added to the list of new drugs already unconscionably longer than the list of benefits derived from their use. The mode of administration of the maize stigmata is to be the extract or syrup, the decoction being "unreliable." The results already obtained with the drug are rapid suppression of the painful symptoms of vesical catarrh and chronic cystitis. In cystitis subsequent to gonorrhœa, or when traumatic in origin, though the medicine produces marked diuresis, it excites increased pain. It may possibly be that the stigmata of maize do contain a product that will prove of therapeutic value, but the experience of recent so-called "new remedies" is not encouraging to the hopeful.—*Med. Press and Circular*, Jan. 14.

Senecio Aureus in Rheumatism.—For removing the rheumatic diathesis, Dr. N. S. Davis (Chicago "Med. Journ. and Exam.," Sept.) extols the life-root plant, *Senecio aureus*. In a typical case of chronic rheumatic carditis he perscribes:

℞	Acid carbolic (crystal),	0·40 gram.	
	Glycerin (pure),	16·00	
	Tinct. gelsemium,	16·00	
	Tinct. digitalis,	32·00	
	Fl. ext. senecio aureus,	96·00	M.

Sig.—Give 5 grams, or an ordinary teaspoonful, in a little water, just before each meal and at bed-time.

The steady use of this, with due attention to diet and exercise, and the avoidance of all use of alcoholic drinks and tobacco, will probably do as much to counteract the rheumatic diathesis, regulate the action of the heart, improve digestion, and thereby prolong the life and usefulness of the patient, as any course of treatment we could suggest.—*Med. and Surg. Rep.*, November.

Formiate of Sodium as a Defervescent.—M. Arloing, of Paris, recently reported to the Academy of Medicine some experiments with this salt, showing that it lowers the animal temperature in a marked manner. It is poisonous when the dose exceeds 1 gram to the kilogram of the living weight of the animal. The effects he describes assign to formiate of sodium a place among defervescent remedies. This compound is therefore pointed out by M. Arloing to the attention of physicians, who might employ it in a certain number of cases where the action of salicylate of sodium is feared, for the formiate does not congest the kidneys like the salicylate, and does not modify the heat so profoundly as this latter substance.—*Ibid.*, Jan. 10.

Administration of Creasote.—Reuss prepares capsules, each containing 5 centigrams of creasote, combined with balsam of tolu as an excipient, for which purpose the balsam is admirably adapted.—*Archivio di Farmacia*, 1880, p. 37.

Protagon, discovered by Liebreich in the brain substance ("Annalen," 134, p. 24 to 44), has been regarded by some authors as a mixture of lecithin and cerebrin. A. Gamgee and E. Blankenhorn ("Ber. d. Chem. Ges.," 1879, p. 1229 to 1234) con-

sider this view untenable, and have prepared large quantities of protagon from the brain of oxen, horses and dogs by a modification of Liebreich's process. Its formula appears to be $C_{160}H_{308}N_5PO_{35}$. It is a white body, permanent in the air, crystallizing when heated with alcohol to 45°C., turning brown at 150°C. and melting at about 200°C. to a brown syrup. On being continuously boiled with ether it is decomposed.

The chemical constitution of Cerebrin, freed from lecithin and cholesterin, and crystallized from alcohol, was studied by Geoghegan, who found as the average result of different analyses: 68·7 per cent. C, 10·9 per cent. H and 1·5 per cent. N. By the action of concentrated sulphuric acid on cerebrin a substance melting at 62 to 65°, and containing no nitrogen, was obtained, which the author calls *Cetylid*, $C_{22}H_{42}O_5$. This is insoluble in water, very soluble in ether, chloroform and hot alcohol, and is transformed into palmitic acid, liberating hydrogen and marsh gas, by the action of melting caustic potassa. The yield of cetylid amounts to about 85 per cent. of the cerebrin. As another result of the action of sulphuric acid on cerebrin, an acid is obtained which is soluble in water, reduces alkaline copper solution and rotates the plane of polarized light towards the left.—*Ber. d. Deutsch. Chem. Ges.*, xii, 1879, p. 2250, from *Ztschr. f. Phys. Chem.*

Chaulmoogra Oil.—John Moss found it to be a mixture of the glyceryl compounds of about 2·3 per cent. cocinic acid, 4 per cent. hypogæic acid, 63 per cent. palmitic acid and 11·7 per cent. gynocardic acid, the two last acids being partly present in the free state. Gynocardic acid has probably the formula $C_{14}H_{24}O_2$, is of a pale yellow color, crystalline, produces the acrid burning taste, which is noticed when chaulmoogra is swallowed, and gives a splendid green color with sulphuric acid.—*Phar. Jour. and Trans.*, Sept. 27, 1879.

Porpoise oil is manufactured largely in Provincetown, Mass. Since about the year 1816 it was obtained from the porpoise, the best being derived from the jawbone; it is admirably adapted for oiling watches, clocks, philosophical apparatus, etc. Since 1829 the black fish has also been used for producing this oil, a superior lubricating oil being obtained from the melon, which is taken from the top of the head, reaching from the spout-hole to the end of the nose and down to the upper jaw, and when taken off in one piece has the shape of a half watermelon, weighs about 25 pounds and yields about 6 quarts of oil. After it has been refined it will become somewhat milky at zero, but will not congeal.

The oil from the melon of the cowfish or grampus is of a very yellow color, and when refined by chilling and straining appears to have valuable lubricating properties.—*Scient. Amer.*, Feb. 21.

Porpoise oil is beginning to form an article of export from Trebizond, in Asia Minor. The porpoises are caught in nets and are also shot by expert marksmen. As much as 300 pounds of oil is occasionally obtained from a single animal, and, in spite of its strong smell, it was generally used for lamps before the introduction of petroleum.—*Jour. Appl. Science*, February.

The origin of balsamum antarthriticum indicum (see "Amer. Jour. Phar.," 1878, p. 475) is referred by Dr. Mathes to *Eperva falcata*, a tree of French Guia-

na. The author also confirms the observations of Dr. Hœlder as to the value of the balsam in rheumatism.—*Memorabilien*, 1879.

Glycyrrhizin is believed, by F. Sestini, to exist in liquorice root in combination with bases, chiefly lime. It is best prepared by exhausting the root with boiling water and a little lime, concentrating the decoction and precipitating with acetic acid. The brownish gelatinous precipitate is washed with water, dissolved in spirit of 50 per cent., the solution decolorized by animal charcoal and evaporated until the alcohol is expelled. The gelantinous mass is dissolved in alcohol, the solution mixed with twice its volume of ether, filtered, evaporated and the residue dried over sulphuric acid. Fresh root, containing 48 per cent. of water, yields 3·271 per cent. of glycyrrhizin, or 6·318 on the dry root.—*Jour. Chem. Soc.*, Sept., 1879.

Oil of Rosemary consists, according to Bruylants, of about 80 per cent. of a lævogyrate hydrocarbon, $C_{10}H_{16}$, boiling near 160°C.; 6 to 8 per cent. of camphor, $C_{10}H_{16}O$, melting at 176° and boiling at 204°C.; and of 4 to 5 per cent. of a borneol camphor, $C_{10}H_{18}O$. With concentrated sulphuric acid a mixture of cymene and terpene is obtained.—*Ibid.*

For burns and scalds, the "Allg. Hopfen-Zeitung" says, one of the best but least known agents is oil of peppermint. Applied by pencil or cloth to the wound, it gives prompt ease from pain and leads to a rapid cure without scars. This oil should always be kept on hand. Previous to its application the burnt part may be kept under water. It is sometimes advisable to dilute it one-half with glycerin. In this form it is an excellent application to frozen extremities.—*Allgemeine Wiener Zeitung*, No. 1, 1880, from *Cinci. Lanc. and Clinic*, Feb. 14.

Menthol, an Anti-Neuralgic.—Mr. A. D. Macdonald, writing in the "Edinburgh Medical Journal," September, 1879, extols the virtues of this substance, which is a volatile solid obtained from Chinese or American oil of peppermint, as a remedy in the various forms of neuralgia. The solution he uses is the following: Menthol gr. i; spt. vin. rect. ♏ 1; ol. caryoph. ♏ x: mix. To be shaken, and painted over the affected tract. Pain is in this way relieved in from two to four minutes, and within a minute or two more the attack ceases. In toothache the author has cleaned out the cavity of the tooth with a little cotton wool, and then placed a single crystal on another small piece of wool and inserted it, with the result that the pain instantly disappeared. A tincture of strength 1·50 is equally effective. Mr. Macdonald recommends menthol as a suitable external application in sciatica, intercostal neuralgia and brachialgia.—*Phila. Med. Times*, Jan. 3.

Alcohol and Chlorinated Lime.—One part of absolute alcohol and 4 or 5 parts of chlorinated lime form a mixture which becomes spontaneously heated in about 10 minutes, when aldehyd, acetal derivatives, alcohol and a greenish-yellow oil, probably ethyl-hypochlorite, distil over. The latter compound is rapidly decomposed, yielding, among other products, a heavy oil, insoluble in water, from which, on fractional distillation, are obtained various chlorinated compounds boiling below

77°C.; also mono- and di-chloracetal, and a compound, probably a chlorinated ethyl-methylic ether, which boils between 77° and 78°C.—*Jour. Prak. Chem.*, xix, p. 393.

The Bichloride of Ethidene as an Anæsthetic.—Dr. J. H. Palmer, of Birmingham, writes to the "Lancet," October 25, of this substance:

"I have administered this drug in half a dozen cases, and so far I have met with favorable results. Unconsciousness is produced, so far as my experience goes, with very little struggling, and 4¾ minutes was the longest time required. The pulse is slowed, but remains full, and I have not yet met with any symptoms of cardiac failure. The breathing was quite quiet and uninterrupted, and there was an absence of all bronchial irritation and frothing at the mouth. Vomiting occurred once in the first five cases, and then was both slight and transient. The largest quantity used was an ounce; this was given to a boy eighteen years of age, who had an organic systolic murmur at the apex of the heart, and he was kept unconscious for 35 minutes. In all these cases the drug was administered on a piece of lint or a towel. It was obtained from C. A. F. Kalbaum, of Berlin. It is a very expensive agent—I believe 32s. a pound—and should be kept in a capped bottle for the purpose of preventing evaporation."—*Med. and Surg. Rep.*, Jan. 24.

Formation of Ozone during the slow Oxidation of Phosphorus. By H. McLeod. The active substance formed during the slow oxidation of phosphorus is probably either ozone or peroxide of hydrogen. Air in which phosphorus is slowly oxidizing was drawn through a **U** tube, 9½ inches long (filled with fragments of glass containing in succession sodic carbonate, a mixture of potassic bichromate and sulphuric acid, and potassic permanganate); the **U** tube was at the temperature of the air, or at 100°C. In both cases the gas which passed through rendered blue a solution of potassic iodide and starch; hydroxyl, under these circumstances, would be completely decomposed. In another series of experiments, the gas was passed through a narrow **U** tube, heated to 150° to 200°C., but no water was formed. It is extremely improbable that ozone and hydroxyl are simultaneously formed, as these substances decompose each other. The author, therefore, concludes that the gas obtained during the slow oxidation of phosphorus possesses the properties of ozone and not those of hydroxyl, the only known peroxide of hydrogen.—*Chem. and Drug.*, Jan. 15

Detection of Mineral Oils in Fats.—E. Geissler saponifies a known weight of the fat in a rather large, long-necked flask, and afterwards adds sufficient hot water to make the liquid reach into the neck of the flask. On allowing this to stand for some time in a warm place, unsaponifiable or still unsaponified oils, if present, will collect on the top of the liquid, and may be readily decanted or removed with a pipette, and the last portions, if necessary, with ether. On weighing this portion, the amount of the admixture is determined.—*Chem. Centralbl.*, 1879, p. 750, from *Corr. Bl. d. Ver. analyt. Chem.*

Durable Cement, prepared by J. Hart, consists of glue, white lead, oil, alum and borax.—*Ber. Chem. Ges.*, xii, p. 4194.

Cure for Corns.—Gezow recommends the following as reliable and painlesss: Dissolve 30 grams of salicylic acid and 5 grams of extract of cannabis indica in 240 grams of collodion. The solution is applied with a camel-hair pencil.—*Pharm. Ztschr. f. Russl.*, 1879, p. 580.

Improved Bleaching Process for Animal Tissues.—Tessié du Mothay places the substances in a moderately concentrated solution of potassium permanganate for a few minutes until they have become yellowish-brown, and then into a solution of sodium bisulphite, when they almost immediately become white.—*Ztschr. d. Allg. Oest. Apoth. Ver.*, from *Jahresber. Phys. Ver. Frankft.*

Flowers, grasses, moss, etc., may be readily colored by allowing them to remain for 12 to 24 hours in an alum solution, drying them, and then placing them, until the desired shade is obtained, into a not too concentrated anilin solution.

A purely green color can only be obtained by mixing much yellow with little blue. Blue flowers are turned red by dilute sulphuric acid, and green by ammonia. Red flowers are turned green by ammonia, and yellow flowers brown.

In order to impart a *white* color to flowers, grasses, moss, etc., they are exposed to sulphurous acid vapors; chlorine water cannot be used, because it is too energetic. After being colored the plants are washed carefully and dried.—*Pharm. Centralh.*, Jan. 22, 1880, p. 35, from *Fundgrube*.

Dyeing with Anilin Black.—Gravitz uses for 100 kilograms cotton a bath of 2,000 liters water, 8 liters pure anilin oil, 32 liters hydrochloric acid and 17½ kilograms potassium bichromate. The cotton, previously well boiled, is allowed to remain in the bath for about one hour, at the ordinary temperature; the bath is then gradually heated to about 90°C., and this temperature is retained until the black is no longer turned greenish by sulphurous acid. The black obtained does not turn green when in contact with air or sulphurous acid, and has a chestnut-brown gloss after washing, which can be changed to violet or blue by boiling with alkalies or soap.—*Pharm. Centralh.*, 1879, p. 342, from *Deutsch. Ind. Ztg.*

The presence of silk in textures is readily ascertained, according to Bœttger, by heating to the boiling point with a solution of zinc chloride of 60°B., when silk is dissolved, while linen and cotton are not altered.—*Chem. Centralbl.*, Nov. 12, 1879, p. 734, from *Jahresber. d. Phys. Ver. z. Frkft.*

Bleaching of Gray Feathers.—A. Viol and C. P. Duflot's method of bleaching gray feathers white consists in suspending them at a temperature of at least 30°C. in rectified oil of terpentine, or of other similar oils (f. e. oil of lavender, thyme, etc.), and exposing to the sun; in this liquid they are allowed to remain, being at the same time acted upon by light and heat, until the liquid evaporates, which usually takes 3 or 4 weeks, when they are rinsed off, dried and blued. Instead of in the bleaching liquid, they are sometimes suspended, with equal success, in an atmosphere impregnated with the vapors of one of the oils mentioned.—*Apoth. Ztg.*, from *Drog. Ztg.*

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, February 17th, 1880.

The meeting was called to order by Mr. Robbins, who was requested to take the chair; the minutes of the last meeting were read, and a correction suggested by Dr. R. V. Mattison, having been made, they were approved.

The recent additions to the library were exhibited; these consisted of the volumes of the Encyclopœdia Britannica, which were purchased with funds derived from the legacy of the late Algernon S. Roberts, one of the original members of our College; the other works were Muter's Pharmaceutical and Analytical Chemistry, Allen's Commercial Analytical Chemistry, Hassall's Adulteration of Food, Simmond's Tropical Agriculture, Simmond's Waste Products and Undeveloped Substances, The British Year-book of Pharmacy for 1879 and a copy of the Dictionnaire des Termes Botaniques, the latter presented by Mr. John E. Cook. It was thought desirable to call the especial attention of the members of the College to the fact that the committee having the library in charge are constantly adding such works, upon the various sciences germain to pharmacy, as will maintain the character of the library.

Prof. Maisch exhibited about fifty excellent photographs of medicinal plants, which had been presented to the College by Mr. C. L. Lochman, of Bethlehem, Pa. The photographs are taken from carefully dried specimens, and show the botanical characters of the plants very well. They are sold at the remarkably low price of $1.50 per dozen, and are well adapted to aid the student in botany and materia medica. It was suggested that the photographs would be best preserved in album form.

Prof. Maisch read a paper upon the fruit of Adansonia digitata (see p. 129), written by F. L. Slocum, and remarked that he had searched in numerous works at his command for an investigation on the constituents of the pulp of this fruit, but only to day had found, in an old German work, the statement, without mention of the author, that the acid taste was due to malic acid.

According to the promise made, Dr. Mattison exhibited a sample of lactopeptin, prepared by him in accordance with the formula published by the New York manufacturer. The difficulties experienced by others who had tried to prepare it were commented upon, and the method of avoiding them explained.

In answer to questions by Prof. Maisch, Dr. Mattison stated that pepsin possessed the power of dissolving albumen only in acid solution; that pancreatin was active only in alkaline solutions; that a mixture of the two in solution must result in the destruction of one, a fact which was also experimentally proven by Prof. Scheffer several years ago, and that the standard strength of pepsin, recognized in the United States, is the dissolving of 120 grains of coagulated albumen by 10 grains of saccharated pepsin in 5 or 6 hours (see "Amer. Jour. Phar.," 1872, p. 11).

Prof. Maisch referred to a paper recently published in the "Chicago Medical Gazette," according to which 10 grains of the patented preparation, called lactopeptin, dissolved two grains of albumen only.

Mr. Thompson read a letter from the manufacturers of the article, who have the proprietary right of the name, stating that it was impossible for more than one drug-

gist in a thousand to prepare, by the published formula, lacto-peptin similar to their own, and that the article thus made by others would never be uniformly the same.

Prof. Maisch alluded to the origin of this discussion, which arose from an inquiry for a formula of a preparation containing lacto-peptin and cinchona, and said that from what had been developed it was evident that no preparation could be made containing both pepsin and pancreatin in an active or unaltered state. He also alluded to the manner in which such and similar copyrighted or secret preparations are introduced, and the facility with which favorable reports and certificates are procured from physicians, and even from many professors of medical colleges.

In response to an inquiry for an efficient remedy for tænia, Prof. Maisch stated that he had successfully used the oleoresin of Aspidium marginale, prepared some years ago by Mr. Patterson. The oleroesin, diluted with an equal bulk of alcohol, had been agitated with about 15 or 20 times its weight of sugar, and afterwards with sufficient water to form a syrup. Given in this manner in divided doses, like oleoresin of male fern, it was well borne by the stomach. The same method had subsequently been tried by Mr. Kennedy with equal success, as reported by him to the Pennsylvania Pharmaceutical Association at its last meeting. The only points to be observed were that the rhizome should be sound and free from any brown or decayed portions.

After some conversation upon various topics, the meeting adjourned.

T. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Cincinnati College of Pharmacy.—The annual meeting was held January 14th. The reports of the officers and standing committees were read and appropriately referred; that of the retiring President, Mr. J. D. Wells, contained many valuable suggestions for future action.

The following officers were elected for the ensuing year: President, John Weyer; Recording Secretary, A. W. Bain; Corresponding Secretary, Louis Heister: Treasurer, Chas. Faust; Trustees—R. M. Byrnes, George Eger, H. H. Koehnken, J. D. Wells and John Ruppert.

A movement was set on foot relative to removing the stamp duty on perfumeries, toilet and medicinal articles, as demanded under Schedule A of the revised statutes of Internal Revenue. A preamble and resolutions were adopted, signed and forwarded to Congress, and a petition pertaining to the same subject and signed by most pharmacists of Cincinnati was forwarded to the same body.

At the monthly meeting, held February 11th, Professor Wayne presented for the cabinet the following specimens and made interesting explanatory remarks on each: bael fruit, coto bark, handsomely preserved underground parts of cimicifuga and caulophyllum, Berberis aquifolia, rare India rhubarb, lactate of calcium, sweet gum and botanical specimens of liquidambar styraciflua, chionanthin, a crystalline principle obtained by him from chionanthus virginica; baptisin deposited from the fluid extract, cinnamic acid from benzoin, containing only a trace of benzoic acid; hippuric acid, obtained to the amount of 10 per cent. from commercial benzoic acid.

of German manufacture, and syrup of lactophosphate of calcium, which had undergone decomposition. In regard to the latter specimen Prof. Wayne remarked that lactic acid at first dissolved the calcium phosphate, that during the decomposition lactate of calcium and free phosphoric acid was formed, that this change frequently occurred over night, and that an analogous change takes place in syrup of lactophosphate of iron. The addition of hydrochloric acid does not prevent this change, but acts merely as a solvent of the salts precipitated.

Alumni Association of the St. Louis College of Pharmacy.—The fifth annual meeting was held at the college rooms, February 17th. After the officers of the past year and the various committees had read their reports, the following officers were elected for the ensuing year: President, J. W. Tomfohrde; Vice-Presidents, F. F. Reichenbach and O. E. Treuller; Recording Secretary, G. H. M. Goehring; Corresponding Secretary, L. Riesmeyer; Treasurer, Charles Gietner; Register, Ed. M. Till; Members of the Executive Board—Adolph Pfeiffer, John G. Goehring, Peter Hoffmann and Edmund Knoebel.

Iowa State Pharmaceutical Association.—Pursuant to the call noticed in our last number (p. 123), the convention of druggists and pharmacists of Iowa assembled in the Academy of Music, in the city of Des Moines, on February 10th, at 10 o'clock A.M. Mr. L. H. Bush, of Des Moines, was elected temporary chairman, and Geo. C. Henry, of Burlington, temporary secretary. The committee on credentials reported that 250 druggists of Iowa had responded to the circulars sent and applied to join the new organization; over one hundred of these were present at the opening session. The objects of the meeting were explained by Mr. George H. Schafer, and an address was made by the Hon. J. D. M. Hamilton in furtherance of the objects.

The following letter was received and referred for further consideration:

"SAINT PAUL, Feb. 6.—To the State Druggists' Association, Des Moines, Iowa. —GENTLEMEN: On behalf of the Western Wholesale Drug Association, I send you hearty greeting. The interests of our Associations are mutual, and our objects in a great measure identical. You seek by association to create good feeling, to remove prejudices, to correct wrong and unbusiness practices and to establish good and wholesome rules; you seek by combination to secure needed legislation and to remove burdensome and annoying taxation. We also have sought and are seeking, in the same way, the same ends. You desire to protect the educated and competent pharmacist against the 'dangerous classes' in the business; we have earnestly advocated this. The matter of adulteration in food, drink and medicine will undoubtedly have your attention. We hold that adulteration in drinks is bad, in food worse, in medicine criminal. We believe also that the wholesale druggist who cheapens quality to cheapen goods, and who adulterates his dealings with 'baits' and 'catch-penny slips,' or the retail druggists who adulterate with poor and unreliable goods what should be a pure and honest stock, comes under just condemnation. We are now seeking to secure the removal or essential modification of the present very unequal, unfair and arbitrary stamp act as applied to perfumery, medicines, etc., usually put up by the retail druggists. We trust your association will put itself on record as earnestly favoring such legislation, and instruct your secretary not only to co-operate with us in securing it, but also direct him to forward copy of your resolutions at once to the chairman of the Committee on Ways and Means at Washington. Very respectfully,

D. R. NOYES,
Secretary Western Wholesale Drug Association."

At the afternoon session the following permanent officers were elected: President, Geo. H. Schafer, Fort Madison. Vice Presidents—Geo. B. Hogin, Newton; W. S. McBride, Marshalltown; F. W. Parish, Clarinda; Francis Lee, Clinton; C. P. Squires, Burlington. Secretary, H. W. Dodd, Fort Madison. Assistant Secretary, A. H. Miles, Des Moines. Treasurer, C. H. Ward, Des Moines. Executive Committee—W. B. Consins, Albia; W. E. Schrader, Iowa City; Norman Lichty, Des Moines.

A committee of five was appointed on Constitution and By-Laws, consisting of George W Fuller, Keokuk; George C. Henry, Burlington; C. A. Weaver, Des Moines; E. L. Boerner, Iowa City; D. B. Snyder, Lyons, who were to report on the following morning. The following delegates to the American Pharmaceutical Association were appointed: T. W. Ruete, Dubuque; C. R. Wallace, Independence; A. R. Townsend, Boone; J. W. Sattherthwait, Mt. Pleasant; Max Conrad, Ottumwa.

The bill for the regulation of the practice of pharmacy and the sale of medicines and poisons in the State of Iowa, now before the House of Representatives, was taken up for discussion, by sections, and with slight modifications approved.

On the second day the Constitution and By-Laws reported by the special committee were considered and adopted. A reply to the Western Wholesale Drug Association was adopted, pledging their co-operation in the removal of the irksome stamp duty on perfumery, etc., and the meeting was addressed on the same subject by Mr. P. Van Schaack, of Chicago.

A communication from the Women's Christian Temperance Union of Iowa on the subject of liquor selling by druggists was received and responded to.

A memorial to the Legislature of Iowa was adopted and signed, urging the passage of the pharmacy bill now pending before that body.

The chair appointed the following standing committees: Committee on Trade Interests—R. W. Crawford, Fort Dodge; A. D. Cram, Des Moines; C. H. Holmes, Magnolia. Committee on Pharmacy and Queries—Emil L. Boerner, Iowa City; Herman Tiarks, Monticello; Martin O. Oleson, Fort Dodge. Committee on Legislation—L. H. Bush, Des Moines; D. Q. Storie, Chariton; D. B. Snyder, Lyons.

After passing a vote of thanks to the druggists of Des Moines, and those who assisted in forming the association, an adjournment was had to meet again in Des Moines on Tuesday, February 8th, 1881.

Pharmaceutical Society of Great Britain.—At the pharmaceutical meeting held February 4, Mr. G. F. Schacht, Vice President, presiding, a large number of drugs were presented by the government through Sir Joseph Hooker, and were commented upon by Mr. Holmes, Prof. Bentley, Dr. Cooke and others. The specimens formed but a small portion of the materia medica collection which were originally in the India Museum.

Mr. Greenish and Dr. Symes spoke on the use of the *polarimeter*, and the latter gentleman described a new instrument made for him by Messrs. Field, of Birmingham, for the price of five guineas.

Mr. Henry Collier read a paper on *tincture of senega as an emulsifying agent.*

Referring to his paper on the use of tincture of quillaia for the same purpose (see this journal, Jan , p. 41), the author reviewed the literature of senegin or polygalic acid, and stated that its emulsifying power was equal to that of saponin. Using half an ounce of water, 5 minims of tincture of senega will emulsionize of fixed oils ℥ss, ol. terebinthinæ ♏xx, copaiba ℥ss, oleores. filicis ℥i, chloroform ♏x. For emulsifying resins, tincture of senega is not as useful as acacia or tragacanth. Tinct. tolu ♏40, tinct. senegæ ♏20, and water q. s. ad ℥i, make a good emulsion, but the quantity of tincture is large.

Mr. Greenish regarded the introduction of tincture of senega as an emulsifying agent as inadmissable. Mr. Gerrard regarded it admissable for emulsifying tar.

At the next meeting, Prof. Redwood will read a paper on dialyzed iron and other analogous iron preparations.

EDITORIAL DEPARTMENT.

State Pharmceutical Associations.—We have repeatedly urged upon our readers, in different sections of the country, the importance of uniting in the organization of State Pharmaceutical Associations. Many of the States bordering on the Atlantic have such organizations; several are in existence in the valleys of the Mississippi and Ohio; an organization has been effected in Texas, and, several years ago, one was formed in California. We are pleased to be able to give, in the present number, an account of the formation of another State society, that of Iowa, which commences its existence with the respectable number of 250 members and with the demand for a pharmacy law. The Iowa State Pharmaceutical Association thus makes a proud record for itself at the very start, and we doubt not it will maintain it in the future. From the accounts received the transactions were characterized by an earnestness of purpose, which deserves and insures success.

Along the eastern, southern and northern borders of the United States, as well as in the interior, there are still a number of States in which such associations have no existence; we trust that the gathering at Indianapolis last September will have sown the seeds, and that their speedy germination will be stimulated by the example set by the druggists and pharmacists of Iowa.

OBITUARY.

Adolphus Frederick Haselden died in London February 4. The deceased has rendered valuable service to pharmacy, and more especially to the Pharmaceutical Society of Great Britain, of which body he was vicepresident from 1869 to 1871, when, on the resignation of Mr. Sandford, he was elected president, in which capacity he served until 1873. Mr. Haselden joined the Pharmaceutical Society as an associate at its commencement, in 1841, and as a pharmaceutical chemist in 1865, and has been one of the examiners, with the exception of a short interval, from 1864 to 1877. His contributions to pharmaceutical literature were characterized by being eminently practical and frequently marked by brightness and piquancy. A number of his papers will be found in previous volumes of this journal.